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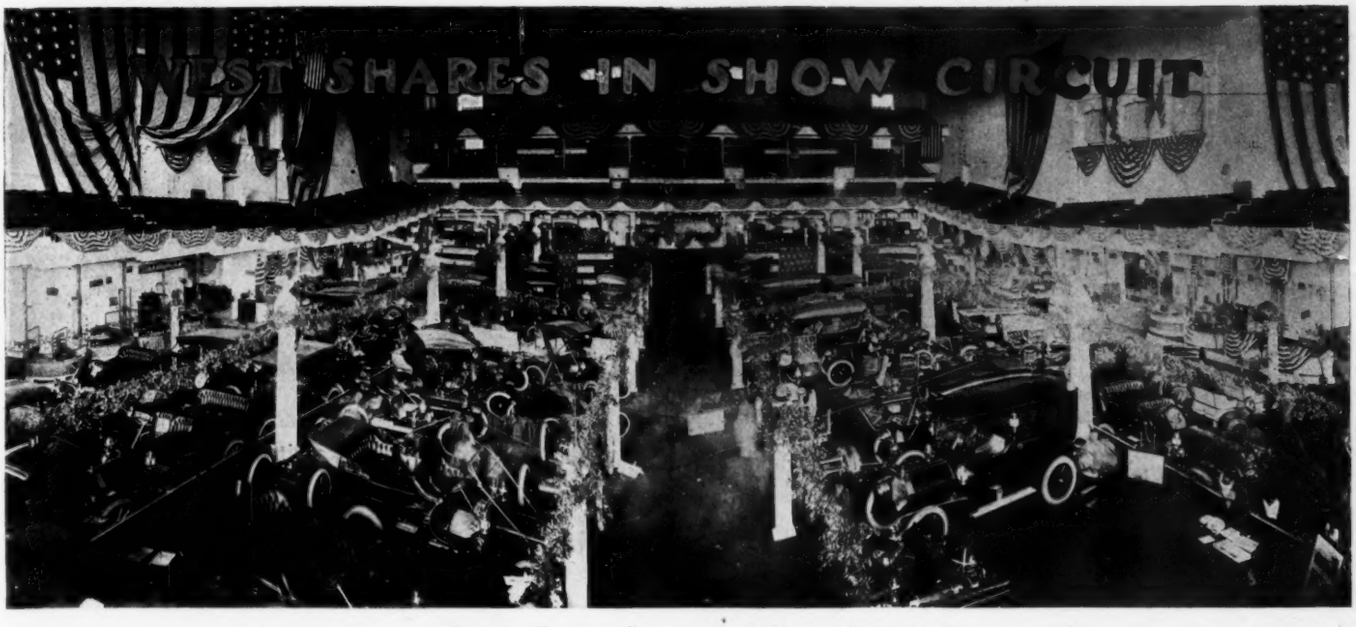
MOTOR AGE



GENERAL VIEW OF SHOW OF THE DENVER MOTOR CLUB

DENVER, COLO., Feb. 18—Denver put a lasting stamp of approval on the motor car and motor shows this week when 16,300 of her citizens passed through the turnstiles during the 3 days and nights of the first motor show held under the management of the Denver Motor Club. This year's show in point of attendance, interest, value of exhibits and business closed by agents augurs well for the motoring industry in the Rocky mountain region. From a financial as well as artistic viewpoint the event was most successful. Too much credit cannot be given the Denver Motor Club and its show committee, consisting of Ralph W. Smith, the president; C. P. Allen, Edward F. Dean, George E. Turner and W. H. Sharpley. They worked hard, long and late.

The plan of decoration was light and airy. Huge white columns, each surmounted by an eagle with outstretched wings standing on a triplet of stacked car wheels and the club banner pendant from the beak flanked the outer sides of the exhibit spaces, while smaller columns surmounted by potted palms marked the center aisle. Ropes of greens extended from post to post. Each space was marked with the section number on a disk, and a neat bronzed board sign carried the names of the cars on exhibition, and the floor was covered with a green carpet. Festooned around the great galleries were American flags interspersed with the club banners.

Scene on Main Floor

The entire main floor and the great hallways on either side and ends, termed for the occasion the annex, were filled with the 107 cars of various models and fourteen motor cycles. At the opposite end from the main entrance were grouped the motor supply houses and over these was suspended a 3-foot electric sign reading "Denver Motor Club," and beneath this in 4-foot letters was the word "Welcome." Every box around the entire hall was occupied by an exhibitor with something that appealed to the motorists' trade.

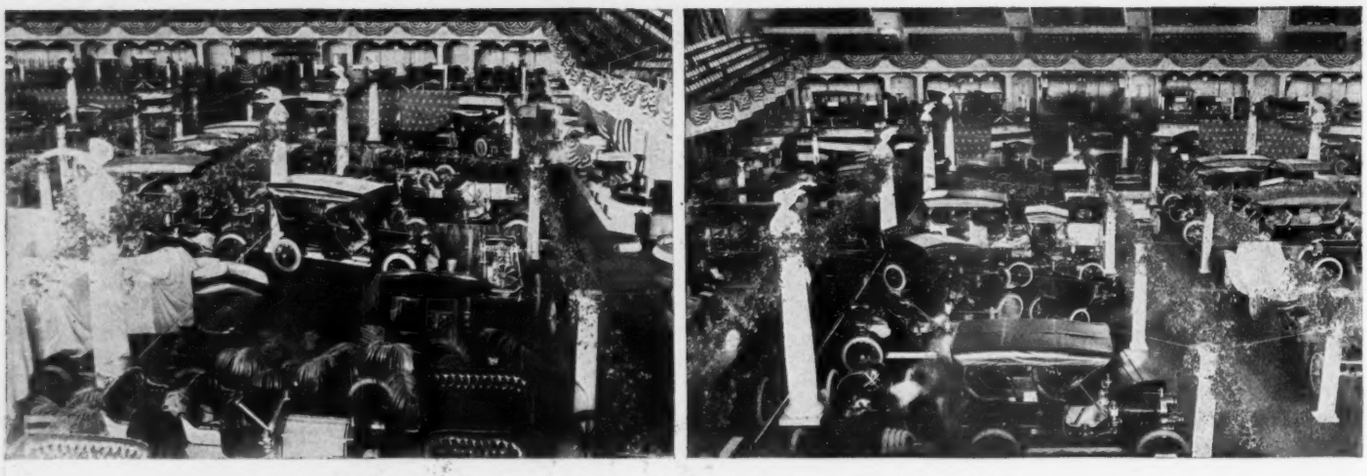
As one entered the hall he first landed on the terrace, where were motor car displays and miscellaneous lines of supplies, and the boxes reserved by the motor club to receive friends and visitors. From this position one faced the entire expanse of exhibits lying 10 feet below. There was not a gloomy spot in the entire exhibition, the ceiling clusters of electric lights and the myriads of side lights permitted a clear inspection of all displays. The agents were well pleased with the many and profitable sales and the public was delighted at the opportunity to get an accurate line on the new models.

Trade Changes Announced

Many trade changes and additions are announced as the result of the show, several manufacturers securing representatives in this territory which is conceded to be one of the most promising in the entire country. The new cars that will be made to appeal to the motorists in this territory and which had their initial exhibition this year were: Moon and Matheson, by the Brinker-Vreeland Automobile Co.; Midland, Central Motor Co., Velie, Denver

DENVER SHOW IN FIGURES

Complete cars of all kinds	107
Chassis	7
Engines	6
Gasoline pleasure cars	90
Electric pleasure cars	13
Commercial gasoline cars	1
Commercial electric cars	2
Steam cars	1
Motor cycles	14
Different makes of gasoline cars	38
Different makes of electric cars	6
Motor car agencies exhibiting	30
Total value of cars	$300,000
Total value of motor cycles	5,000



VIEWS SHOWING DECORATIONS IN AUDITORIUM DURING THE DENVER SHOW

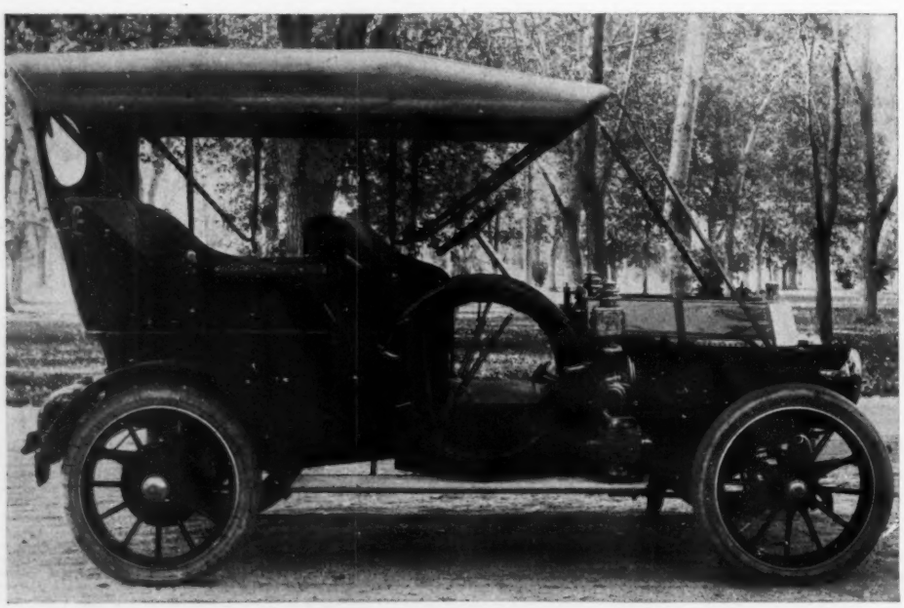
Rubber Tire Works; Welch, F. J. Garbrioni; Speedwell, Griebel Motor Car Co.; Great Western, Weego & Brother; Firestone motor buggy, P. K. Morcom; Frayer-Miller truck, Havens Motor Car Co.

Colburn Cars Shown

The exhibit of Colburn cars consisted of a 40-horsepower five-passenger touring car and chassis, a 30-horsepower runabout and chassis and a 40-horsepower seven-passenger touring car. This company also builds a car with a motor rated at 25-30 horsepower. The motor used in these cars is of the four-cylinder, vertical, valve-in-the-head type, and water-cooled. Cylinders are cast in pairs, with integral water-jackets of large capacity; and both so designed that intake and exhaust valves may be completely surrounded with water. One of its most prominent features is the overhead camshaft supported on D. W. F. bearings. The pistons are of selected gray iron, fitted with rings of a special composition, and all ground to the size of the cylinder. Piston pins are of steel tubing hardened and ground and anchored in the piston by setscrews which are locked in place. The connecting rods are steel drop forgings of I-beam section; the crankshaft is made from heat-treated carbon steel, machined all over and ground; and in the 30 and 40-horsepower models die-cast aluminum babbit bearings are used throughout. The base of the motor is a manganese bronze casting. Lubrication is splash in connection with a force feed oiler; jump spark ignition is used with a high-tension Bosch magneto, and a centrifugal pump supplies the water circulation. The clutch used on all models is of the Hele-Shaw multiple-disk type, with alternate disks of copper and steel, each disk containing a V-shaped groove which fits into the corresponding groove of the next disk. This clutch is thoroughly housed in and runs in oil.

The transmissions on all models are of the selective sliding gear type, but vary in regard to number and arrangement of speeds. In the 30-horsepower cars there are four forward speeds, with direct drive on third speed; in the 40-horsepower cars there are four forward speeds with direct drive on high, while in the 25-horsepower models three forward speeds are given with direct on high. It is claimed by the Colburn company that the gears are made from the best imported chrome nickel steel, the transmission-shafts from the finest tool steel, and all are hardened and ground to size. Imported annular ball bearings are used throughout the change gear cases.

Drive is by shaft to the floating rear axle which is equipped with Timken roller bearings, and a differential of the spur gear type. All models have a pressed steel frame of channel section, and are fitted with an irreversible steering gear. Control is conventional, with clutch and service brake pedals, change gear and emergency brake levers to the right of the driver's seat and spark and throttle levers over the steering wheel. The brakes are of the internal and external type acting on separate drums for each set on the rear wheels. The 25-horsepower cars have 34 by 3½-inch tires, a 102-inch wheelbase, weigh 1,800 pounds, are equipped with platform springs in the rear and have a ball-bearing crankshaft in the motor; the 30-horsepower models have 34 by 4-inch tires, 108-inch wheelbases, weigh 2,500 pounds and have semi-elliptic springs, and the 40-horsepower models are fitted with 36 by 4-inch front and 36 by 4½-inch rear tires and have a wheelbase of 116 inches.



A DENVER-MADE CAR, THE MODEL E COLBURN

The Fritchle Automobile and Battery Co., of Denver, exhibited three of its latest electric vehicles, including a four-passenger extension front coupé, a victoria with a full top and a victoria with a three-quarter top and Motz cushion tires. This company also builds two-passenger and combination two and four-passenger stanhope roadsters. The specifications on the coupé show that the wheelbase is 86 inches, 34 by 3½-inch quick-detachable tires are fitted and brakes are of the contracting band type, acting on drums on the rear wheels and on the armature shaft of the motor. A normal 3-horsepower Fritchle motor furnishes the power and the current is stored up in Fritchle batteries of twenty-eight cells of II M. F. Full-elliptic springs are used all around. The speed of the car ranges from 5 to 19 miles

an hour. The victoria seats two passengers, has a wheelbase of 76 inches, 32 by 3½-inch tires and eight speeds ranging from 5 to 24 miles per hour. Brakes, motor, batteries, springs and the single chain-drive to the rear axle are practically the same in all models. All vehicles are built to order and the purchaser has his choice of body painting and upholstering.

Some of the exhibits of complete cars and chassis were shipped direct from the eastern shows. From Chicago came four of the Thomas cars, the Moon and Matheson and the polished Matheson chassis, the Stevens-Duryea six-cylinder polished chassis, the Peerless exhibit, the Pierce, the Chalmers-Detroit chassis, Mora chassis, Franklins, Cadillac chassis and several others.

The largest display was made by the Mathewson Automobile Co., showing four Thomases, two Oldsmobiles and two Columbus electrics. The Tobin Motor Car Co.'s exhibit of the Peerless and Apperson consisted of a total of five cars. The total value of all the exhibits of cars was close to $300,000 and that of the motor cycles $5,000. Add to this sum the accessory displays and the miscellaneous and there was at least $500,000 in merchandise on display.

Attractive Features of the Show

The Consolidated Supply Co. was showing the Nadall demountable rim, as one of the newest supplies. A Stewart speedometer 4 feet in diameter and in operation, also a spark plug 4 feet long and built otherwise in proportion with the sparks flying, were Manager Fry's crowd-getters. On the spark plug was a notice that $100 would be paid to the person naming the horsepower of the motor using that sized plug. The newest tool shown was the J. R. Sandberg valve grinder by the Auto General Supply Co. It is patented by Sandberg, a machinist in the Colburn motor car factory. It has a forward and backward movement at the same time constantly revolving, and by this method guarantees a true seat. It weighs 2¾ pounds. The Fireless Cooker Co. was showing a cooker to be carried on a motor car, thus assuring hot meals while en tour. Mrs. M. E. Brooke presented an airless tire, which she invented and secured patent on January 21, 1902. The Rocky Mountain Tire Co., of Boulder, Colo., was demonstrating its punctureproof, non-skid tires, a heavily-armored affair.

DENVER AUDITORIUM IN WHICH RECENT SHOW WAS HELD

The Mackley Water-Heater Co., of Denver, with the Iona heater demonstrated a handy, portable affair for garages as well as other buildings. Tests made by the Carnegie technical school of Pittsburg show the Iona to have 39.1 per cent heating efficiency, or a saving in fuel from 10 to 60 per cent over old methods.

G. L. Wands & Co., of this city, gave notice that they were handling the western business of the Hoosier Mfg. Co. and the Safety Device Co., both of Indianapolis, Ind. The products are soaps, lubricating compounds and screw-cutting compounds, and the break-circuit locks. The lock does away entirely with the use of a switch and plug and is placed on the coil box or in any convenient location. It is built with the proper connections for any system of ignition, and there are types for gasoline and for electric cars.

Among the factory representatives in attendance at the show were the following: Charles Corkhill, sales manager Olds Motor Works; S. Davidson, western representative Columbus electrics; G. F. Freese and A. C. Blanchard, from the Thomas factory, Buffalo; George Arbuckle, supervisor the Winton company; J. E. Roper, Jr., sales manager Great Western Motor Car Co., Peru, Ind.; C. W. Matheson, of New York city; H. C. Merrill, traveling salesman for the Moon, of St. Louis; Milton Hughes, traveling salesman for the Rauch & Lang electrics, Cleveland, which is now being handled by the Brinker-Vreeland Co. here; George Troutt, from the Cadillac factory; John F. McLane, sales department of the Franklin, Syracuse, N. Y.; R. Harry Cron-

FRITCHLE FOUR-PASSENGER ELECTRIC COUPE

FRITCHLE VICTORIA PHAETON ELECTRIC

inger, of the Pennsylvania company, Bryn Mawr, Pa.; H. T. Wheelock, manager John Deere Plow Co., Kansas City, Mo.

George F. Huber, a local mining engineer, amused the crowd on the last night of the show by giving demonstrations with his model of an airship which he is working on. The few short flights made in the hall were quite satisfactory.

State Association Formed

Taking advantage of the very large attendance of Coloradoans at the motor car show this week, the officers of the Denver Motor Club got busy, invited everyone to the clubrooms, and with a good representation of the most active motorists in the state the Colorado Automobile Association was formed. Incorporation papers were immediately drawn up, and after they are issued, in a few days an application for affiliation with the A. A. A. will be forwarded to that organization. The temporary officers are Ralph W. Smith, of Denver, president, and Frank England, Denver, secretary.

This movement means a more commanding position for Denver and Colorado in the endeavor to secure the approval of the contest board to extend the Glidden tour to Denver this summer. It makes an organization of about 700 motorists. It means also a greater strength in behalf of the legislation in favor of good roads and motoring laws now being considered by the state legislature.

Following is a list of the exhibitors:

MAIN FLOOR

E. R. Cumbe—Rambler, Mitchell.
Tom Botterill—Pierce-Arrow.
Felker Automobile Co.—Stevens-Duryea.
J. H. McDuffee—Chalmers-Detroit.
George Hannan—Jackson.
Charles Bliz—Franklin.
W. W. Barnett—Stoddard-Dayton.
Colorado Automobile Co.—Cadillac.
E. Linn Mathewson—Thomas, Oldsmobile, Columbus electric.
Studebaker Automobile Co.—Studebaker, E-M-F.
Velie Motor Vehicle Co.—Velie, Welch.
Colburn Automobile Co.—Colburn.
Fernald Automobile Co.—Maxwell.
Tobin Motor Car Co.—Apperson, Peerless.
MacFarland Automobile Co.—Packard, Buick.
Denver Motor Car Co.—Overland, Baker electric.
Ford Motor Co.—Ford.
Fritchle Automobile and Battery Co.—Fritchle electric.
F. J. Garbraoni—Welch.
Louis Leiber—Mora.

THE TERRACES

Brinker-Vreeland Automobile Co.—Moon, Matheson, Rauch & Lang electric.
A. T. Wilson—Oakland, Kisselkar.
Jesse C. Narmore—Reo.
Havens Motor Car Co.—Dorris, Frayer-Miller trucks.

ANNEX

C. S. Newson—White.
Central Motor Car Co.—Midland.
F. W. Weego & Brother—Great Western.
J. Harvey Nichols, Jr.—Winton.

COMMERCIAL VEHICLES

Studebaker Automobile Co.—Studebaker.

MOTOR CYCLE SECTION

Tom Botterill—Pierce, Harley-Davidson.
Mead Autocycle Co.—Excelsior.
Boot Motorcycle Co.—Reading-Standard.
Hathaway Motor Co.—Indian.
Fred H. Williams—Thor, N. S. U.

PARTS AND ACCESSORIES

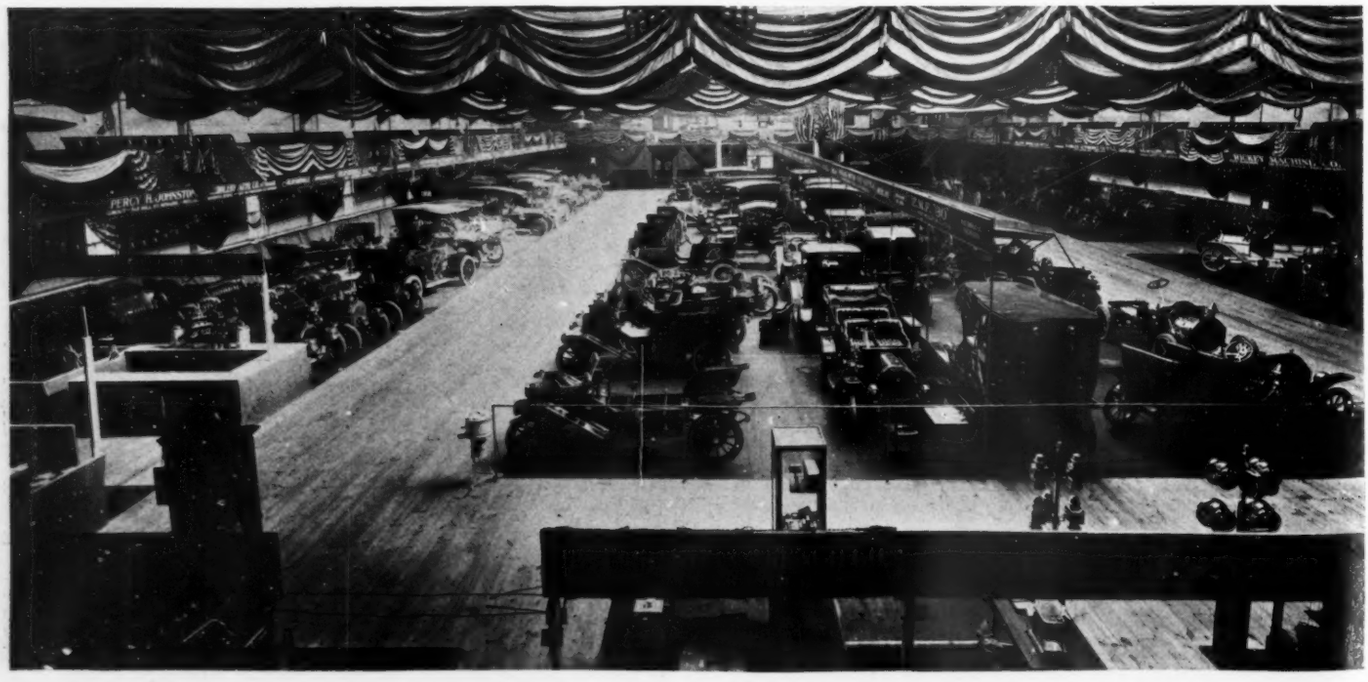
Boss Rubber Co., tires; S. E. Gillard, tires; George J. Kindel, air-cleaning system; National Paint Mfg. Co., polish; Iona Water Heater Co., water heater; Carstarphen Electric Co., electric supplies; Vanguard Mfg. Co.; Scott Tool and Supply Co., parts; Denver Auto Goods Co., supplies; Metal Polish Shop, polish; Consolidated Supply Co., supplies; Auto General Supply Co., supplies; General Electric Co., rectifiers; Westinghouse Electrical Supply Co., rectifiers; Continental Oil Co., oils and greases; G. L. Wands & Co., safety lock; Pickens Brothers, garments; Eastern Radiator and Lamp Repair Co., radiators and lamps; Standard Carriage Works, bodies and tops; Vacuum Cleaner Co.; Ideal Cleaner Co.; Dr. J. W. Puckett, Permanit; Fireless Cooker Co.; Davis Robe Co.; Rocky Mountain Tire Co.; Brooke Airless Tire Co.; Oildag; Curran Bill Posting Co.

NEBRASKANS FLOCK TO THE SHOW AT OMAHA

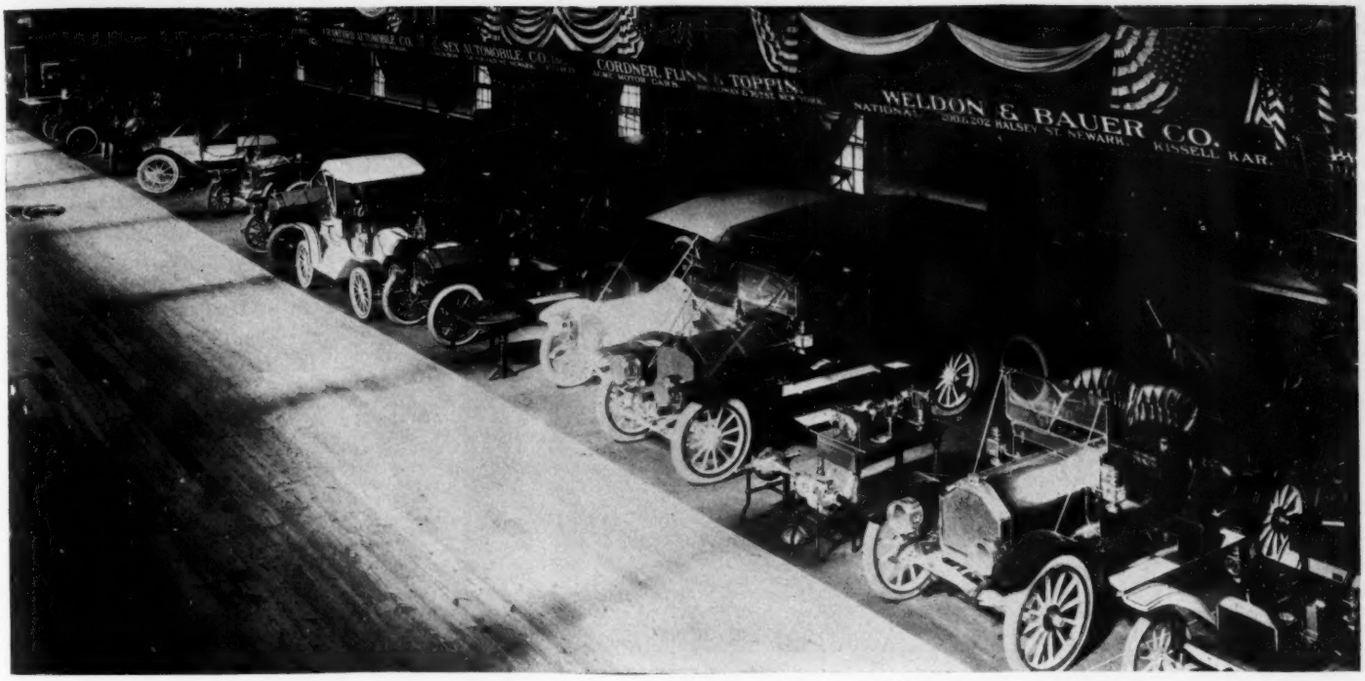
OMAHA, NEB., Feb. 24—After weeks of active preparation, during which time a committee of three in charge of the arrangements was kept almost continuously busy, Omaha's third annual show was opened this morning in the Auditorium with prospects of one of the best and biggest affairs ever given here. When the final arrangements were completed, the last applicant taken care of, and the finishing touches put on the immense building in which the show is being held, it was found that twenty-five Omaha dealers were represented with at least sixty different makes of cars. Because of the limited amount of space available, 22,000 square feet, each exhibitor was permitted to display not to exceed ten models, and many of them took advantage of this ruling and are showing the full quota.

The huge Auditorium, which is one of the largest convention halls in the country, is elaborately decorated in purple and white, with yard upon yard of bunting covering the entire ceiling and walls; hundreds of palms surrounding the various booths; strands of baskets filled with flowers and green leaves strung around the balcony, and upwards of 1,000 electric lights. The Auditorium proper has been divided by a row of white posts capped with electric light globes running the full extent of the building. With the exception of posts of a similar kind at the four corners, the booths are not divided, as is customary in exhibitions of this character, thus permitting the visitors to roam at will about the building.

The attendance from points in Nebraska, surrounding states and from Omaha proper on the opening day was gratifying to the management. A conservative estimate places the expected daily attendance at 3,000. The record day, society night, on



GENERAL VIEW OF SHOW NOW IN PROGRESS IN NEWARK, N. J.



WIDE AISLES AND GENERAL ROOMINESS FEATURES OF NEWARK SHOW

Friday, is expected to bring out Omaha enthusiasts in large numbers. Owners from all over the state are especially enthusiastic over the show, many of them having come from distances of 300 and 400 miles. With a total of twenty-five dealers, there are approximately 100 motor cars claiming the attention of the public, besides a liberal display of tires and accessories.

Judging from past experience, the medium-priced car has proven the most popular with the Nebraska and Iowa farmer and business man, and for this reason, perhaps more than any other, the dealers have confined their models to that class. Cars ranging in price from $1,000 to $3,000 predominate, while there are quite a few that nothing less than $5,000 will induce their owners to part with.

The exhibition, which is under the auspices of the Omaha Automobile Show Association, will close at 11 o'clock Saturday night. The active work has been done by a committee of three, consisting of Colonel J. J. Deright, president of the J. J. Deright Co.; W. D. Hosford, manager for the John Deere Plow Co., and Clark Powell, of the Powell Supply Co., who have done their work well.

A comparison of the growth and popularity of motor shows in Omaha is had from the fact that 4 years ago, when the first one was held, there were only four exhibitors. That event, however, is not regarded as an annual show. At the next, the first annual Omaha show, there was an increase of but three exhibitors over the first event. Then there was a jump to seventeen exhibitors at the second annual, and judging from the enthusiasm displayed among the dealers, the next show will eclipse by far anything previously held here.

There has been some talk that the Auditorium, with its 22,000 to 25,000 feet of floor space, will be inadequate for the next display, and it is very likely that when the time comes for making arrangements for the show next year, steps will be taken to secure the use of the Coliseum, an immense structure on North Twentieth street that will hold many more exhibits than is possible to get into the Auditorium.

Following is a list of the exhibitors and cars shown:

Atlantic Automobile Co.—Reo, Ford, Premier.
Baum Iron Co.—Accessories.
Berger's Automobile Co.—Buick.
Central Tire and Rubber Co.—Accessories.
Coit Automobile Co.—Mitchell, Rambler.
John Deere Plow Co.—Velie, Columbus electric.
J. J. Deright & Co.—Stoddard-Dayton Ford, Waverley electric; Rauch & Lang electric.
Drummond Carriage Co.—White steamer, Woods electric.
Electric Garage—Baker electric.
Freeland Brothers & Ashley—Mason, Midland, Randolph.
W. L. Huffman, Hupmobile, Regal.
International Harvester Co.—International Harvester inter-delivery, and touring car.
R. R. Kimball—Stevens-Duryea, Cadillac, Stanley steamer, Babcock electric.
Brick P. Kuhn—Holsman, Frayer-Miller, Interstate.
Lininger Implement Co.—Oakland.
C. F. Louk—Maxwell.
T. G. Northwall Co.—Brush.
Oldsmobile Co.—Oldsmobile.
Omaha Bicycle Co.—Indian, Harley-Davidson, Pierce motor cycles and accessories.
Omaha Rubber Co.—Accessories.
Pioneer Implement Co.—Jackson.
Powell Supply Co.—Accessories.
Guy L. Smith—Franklin, Peerless.
H. H. Van Brunt—Overland, Pope-Hartford.
Omaha Automobile Co.—Auburn.

REPRESENTATIVE DISPLAY MADE AT NEWARK

NEWARK, N. J., Feb. 22—Before a crowd estimated at 10,000, the second annual show, under the joint auspices of the New Jersey Automobile Trade Association and the New Jersey Automobile and Motor Club, was officially opened by President George F. Reeve, of the Newark board of trade, on Saturday night. The Essex Troop armory, where the show is being held, is admirably adapted for the purpose, having a main floor space of upwards of 25,000 square feet, which permits not only ample space for showing the exhibits, but the 15-foot aisles give the spectators plenty of elbow room. Just an even half-hundred exhibitors are accommodated under the armory roof—made up of twenty-five makers of and dealers in motor cars, three of motor cycles and twenty-two of supplies and accessories of various kinds. Of the car exhibitors, five show two makes—a grand total of thirty separate and distinct factory products. Many of the larger exhibits contain four or five cars, the total number of complete cars and chassis on the floor being but little short of 100. And yet, so immense is the hall, that the spectator is given the impression that the space was more than adequate for the demand. Not alone in the matter of space is the Essex Troop armory an ideal show place—there is plenty of daylight, and the accommodations are up to the minute, the plant being less than a year old. A real novelty in local shows—an adequate restaurant with excellent service—keeps the exhibitors in the building during show hours, which helps along the business end materially. In this connection it should be mentioned that the present show is designed to bring the dealers and "prospects" of northern New Jersey into touch, and that it is doing it was made manifest as early as this morn-

ing, when the up-state agents and dealers poured into the armory in droves. Although too early to positively forecast results, the enthusiasm of the management as to the outlook warrants the prediction that as a business show Newark's effort will stand in the front rank of local exhibitions.

From a decorative viewpoint the general effect is most striking. The fronts of the balconies, which extend around all four sides of the armory, are hung with blue and gold draperies set off with the national colors and festoons of flags. Liberal treatment of the otherwise rather bare overhead construction and the side and end walls, also in the prevalent blue-and-gold and red-white-and-blue color scheme, make an ensemble that is more than striking. Certain it is that no city in the country—with the possible exception of New York and Chicago—is now better equipped than Newark to handle a big show. The spaces are all carpeted with olive green rugs, gilt rails from which depend olive green hangings separating the various exhibits. The olive green scheme, which contrasts effectively with the overhead and wall decorations, is carried out in the signs, which, framed in gold, with white lettering, are elevated on gilt uprights in order that they may be seen from any point in the huge hall.

Novelties are naturally scarce. In the accessories line, however, there is one new-comer, a gear-lock, the invention of a Newarker, Clarence E. Fisher, head of the sales department of the Motor Car Co. of New Jersey. This device, which is intended to put a stop to joy riding, is exceedingly simple, and its working is demonstrated so satisfactorily by the inventor that numerous sales are recorded daily.

Following is the list of exhibitors:

MOTOR CARS

Atlantic Motor Car Co. of New Jersey—Stoddard-Dayton.
Brush-McLaren Motor Co.—Brush.
Cordner, Flinn & Toppen—Acme.
Crawford Automobile Co.—Crawford.
Ellis Motor Car Co.—Pierce-Arrow.
Essex Automobile Co., Inc.—Jackson and Ford.
Fiat Automobile Co.—Fiat.
Greene Motor Car Co.—Locomobile.
Percy H. Johnson—Grout and Regal.
H. J. Koehler—E-M-F.
Martin Auto Co.—Mitchell.
J. W. Mason—Maxwell.
Middleby Auto Co. of Newark—Middleby.
Motor Car Co. of New Jersey—Cadillac.
O'Neil Motor Car Co.—Reo and Premier.
Oldsmobile Co. of New York—Oldsmobile.
Overland Motor Car Co. of New Jersey—Overland.
Paddock-Zusi Motor Car Co.—Chalmers-Detroit.
Carl H. Page & Co.—Peerless.
J. M. Quinby & Co.—Isotta-Fraschini and Pennsylvania.
Rambler Automobile Co. of New Jersey—Rambler.
Rickey Machine Co.—Marmon.
A. G. Spalding & Bros.—Stevens-Duryea.
Weldon & Bauer Co.—National and Kisselkar.
White Co.—White steamers.

MOTOR CYCLES

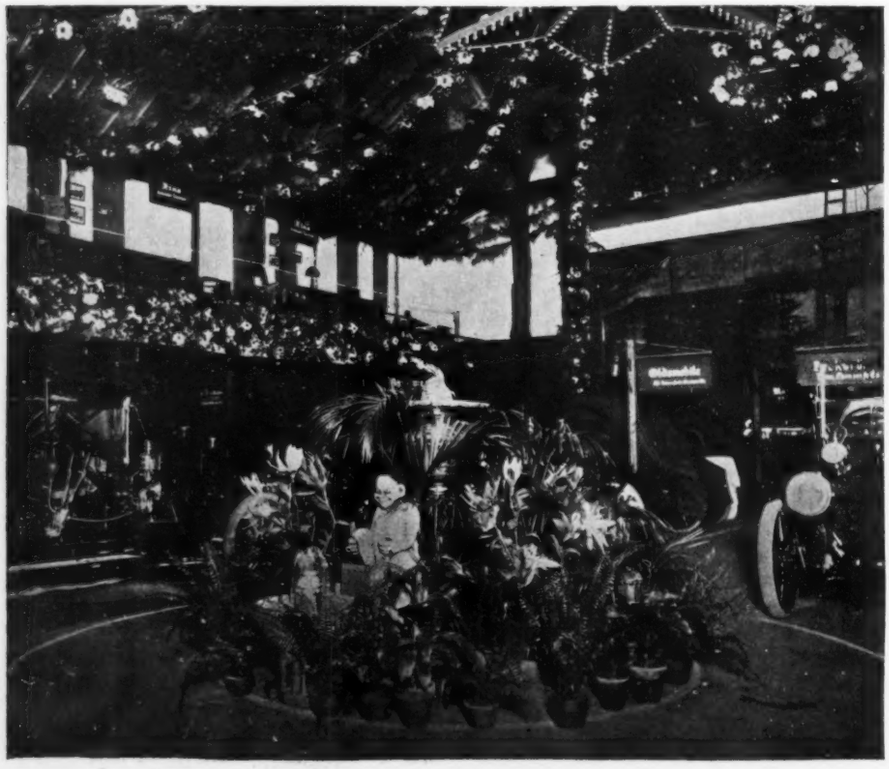
Benj. F. Howard—M-M.
H. J. Koehler Sporting Goods Co.—Indian.
Springfield & Moore—Excelsior.

ACCESSORIES

Auto Tire & Repair Co.—Home tires.
William C. Baker Heating and Supply Co.—Garage heaters.
Central Advertising Co.—Signs.
Dayton Rubber Mfg. Co.—Dayton airless tires.
D. B. Dunham & Son—Bodies.
Electrical Maintenance and Repair Co.—Electrical supplies.
Empire Auto Supply Co.—Supplies.
Ennis Rubber Mfg. Co.—Ennis tires.
Follett Time Recording Co.—Automatic time recorders.
Hydro-Carbon Machine Co.—Carbureters.
Adolf Karl Co., Inc.—Permanent puncture preventer.
National Oil and Supply Co.—Visco's oils.
National Surety Co.—Ball bonds.
No-Worry Pneumatic Wheel Co.—No-Worry wheels.
New York Auto Top and Supply Co.—Tops and supplies.
Orange Machine and Mfg. Co.—Little Grant air compressors.
Perfection Wrench Co.—Wrenches.
W. S. Sheppard—Ideal oils.
Standard Leather Washer Mfg. Co.—Supplies.
Standard Oil Co.—Lubricants.
Tiresele Co.—Tiresele.
Union Battery Co.—Dry cells and batteries.

HARTFORD'S SECOND SHOW IS ATTRACTIVE

HARTFORD, CONN., Feb. 20—At 8 o'clock tonight the annual motor car show of the Hartford Automobile Dealers' Association bloomed into reality. The attraction is housed in the armory of the First company, Governor's Foot Guard. The decorative scheme is simple yet harmonious, pleasing, effective. Strings of electric lights reach from one corner of the roof to the other and in the center suspended from the ceiling is a mammoth star made of various colored electric lights. Directly beneath it on the ground floor is the electric fountain spurting numerous tiny streams of perfumed water, the pleasant odor of which pervades the atmosphere. The signboards announcing the cars on exhibition are ragged-edged and carry mission lanterns. Vines, smilax, spruce boughs, potted palms and flowers intertwined with electric lights render a very pleasing decorative effect. Surrounding the fountain are potted palms and artificial tulips lighted with tiny electric bulbs. It is true, the hall is rather small for a motor car show, but by economizing on the space the committee has done very well, indeed, and every one is satisfied with the results.



DECORATIVE FOUNTAIN IN HARTFORD SHOW

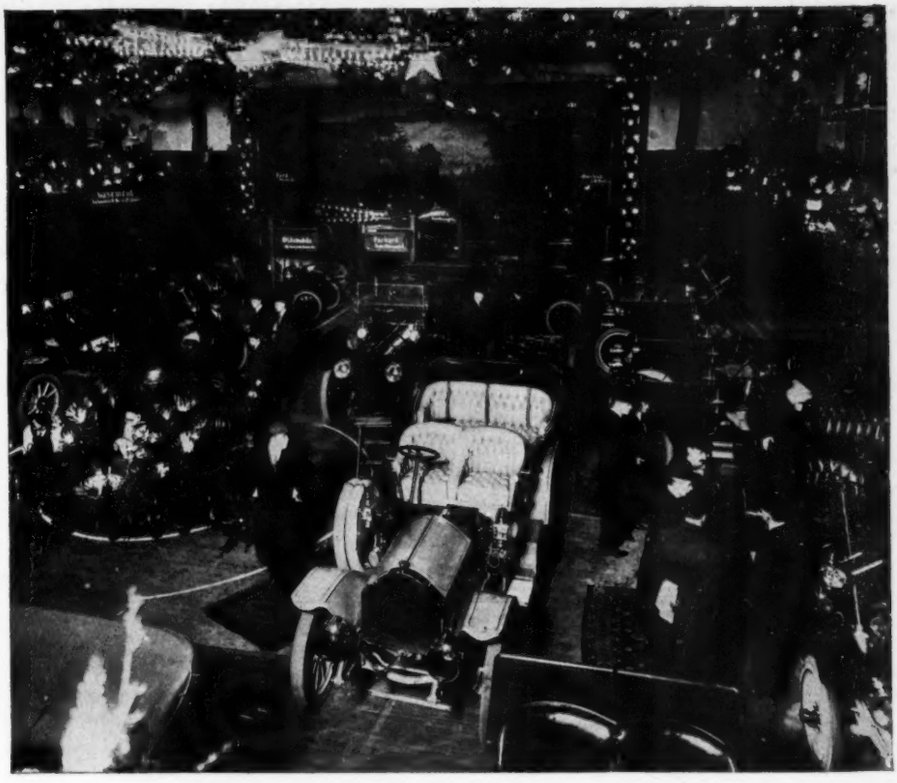
All the cars, save for two or three, are shown on the ground floor and the stage. A large aisle is provided through the center of the hall. To the right, on entering, is the exhibit of the Miner Garage Co., showing the Pierce-Arrow, Knox and Buick. On the opposite side of the aisle is the Mitchell exhibit. In the basement is another car of the same make fitted with a bus body for the Allyn house. The Thomas Flyer rubs elbows with the Mitchell. The Thomas, Oldsmobile, Waverley electric, E-M-F and White steamer are shown by the Palace Auto Station Co. Across the aisle the Packard 30 is shown by Brown, Thomas & Co., who also have the Cadillac and Stevens-Duryea. Across the aisle is the American roadster making its first appearance here and shown with the Maxwell and Stoddard-Dayton by R. D. & C. O. Britton. On the elevated stage is the Ford, exhibited by Louis Elmer. At the other end of the stage are shown two Overland runabouts. To the right of the

main entrance, in a side room by itself, is the Rambler exhibit. To the left of the entrance adjoining the Mitchell space is the Elmore. In a room off the main hall the Franklin is shown. In the basement the Stanley steamer runabout is shown by W. J. Hickmott, Jr. This and the White are the only steam models displayed. The Jackson is exhibited by A. E. Lazarro, for the first time in this locality, and has been well received.

A new car of local manufacture, the McCue-Hartford, is here in a runabout model. The Jewel, another newcomer, is shown by J. A. Wood in two models, stanhopes. The Simplex and Palmer & Singer were to have been shown by T. Dudley Riggs. Unfortunately, Mr. Riggs could not secure his cars in time for the exhibition. The Atlas was to have been shown, but it was impossible to get cars here in time, so that make is not on the floor.

Thursday evening of this week a banquet will be given at the Allyn house by the dealers' association. Governor Lilley and Mayor Hooker are expected to be present. The list of exhibitors is as follows:

Palace Automobile Station Co.—Thomas, Oldsmobile, E-M-F, White, Waverley electric.
Miner Garage Co.—Pierce-Arrow, Knox and Buick.
Brown, Thomson & Co.—Packard, Stevens-Duryea and Cadillac.
Capitol City Auto Co.—Mitchell.
Dunbar & Mansir—Elmore.
Elmer Automobile Co.—Ford.
W. J. Hickmott, Jr.—Stanley steamer.
Thomas B. Jeffery & Co., Boston—Rambler.
McCue Co.—McCue-Hartford.
A. W. Peard—Overland.
J. A. Wood—Jewel.
A. E. Lazzaro—Jackson.



LOOKING DOWN ONTO MAIN FLOOR OF HARTFORD SHOW

R. D. & C. O. Britton—American roadster, Maxwell and Stoddard-Dayton.
Accessories—Aetna Life Insurance Co., liability insurance; Travelers' Insurance Co., liability insurance; Alling Rubber Co., tires, tubes, rubber accessories; Fairbanks Co., marine motors; A. L. Foster & Co., motoring apparel; G. W. Fuller Co., trunks, bags and trunk racks; Hartford Auto Parts Co., parts; Hartford Mill Supply Co., supplies; George S. Maslen, Indian motor cycles; Perfection Wrench Co., wrenches; James Pullar & Co., motor car metal and wood bodies; Post & Lester Co., tires, tubes and general accessories; Tracey, Robinson & Williams Co., marine motor supplies; Smith, Worthington Co., motoring accessories.

BUYING SEASON OPENED BY CLEVELAND SHOW

CLEVELAND, O., Feb. 22—With Central armory, the largest floor space in the city, filled, many cars exhibiting in the balcony and an overflow show being held in the Hollenden hotel, the local show season opened today in most auspicious style. The decorations have never been as complete, while the effect produced, that of an Italian garden with a riot of flowers and color, delighted the thousands who crowded into the buildings today. It has reached a point in this city where it is impossible to exhibit all the cars in the armory with any degree of comfort. As a result the Locomobile, Babcock electric and Regal are holding an overflow show in the Hollenden, while the Mora, Reo and Premier and Overland are giving private shows in their own salesrooms. All this despite the fact that more cars are being shown in the armory than ever before.

The show in Cleveland really starts the buying season for the local tradesmen, for the majority of purchasers hesitate to place definite orders until the annual exhibition. At a conservative reckoning, close to a hundred retail sales depend upon the show itself, the orders being placed shortly afterward. Many buyers are willing to give an agent their assurance that his car is satisfactory in every way, yet hesitate about closing "until the show."

The Cleveland show is also a boom for many dealers in nearby towns. Many of these come to the local show annually, bringing with them a long string of prospects, who have also held off purchasing for the reasons given above. Not only retail sales, but many agency deals, are closed in Cleveland during the show, state representatives of many of the factories doing considerable business here. This applies principally to the low-priced machines, however.

Close to $10,000 was spent by the show committee this year in preparing the armory for its gala week. Electric fountains are one of the principal features, while thousands of artificial flowers, with a tiny incandescent bulb resting in the heart of each, give the huge building an appearance hard to describe. Tonight, when the lights were suddenly switched off, with the exception of the flower illumination, the crowd gave evidence of its appreciation with instantaneous applause.

That the 1909 show will see good business done is the opinion of practically everyone connected with the trade locally. Those in the trade can quickly tell the difference between a "buying" and "looking" crowd. Cleveland is admittedly one of the best retail fields in the country, and with the influx of the new models, trade has certainly received an added impetus.

The Babcock electric has returned to the local field, after an absence of over a year, while the Locomobile is now sold here also. The Knox and Pierce-Arrow, as well as the Woods electric, are in the field, while the Waverley and Detroit electrics are making good headway, although each is comparatively a newcomer.

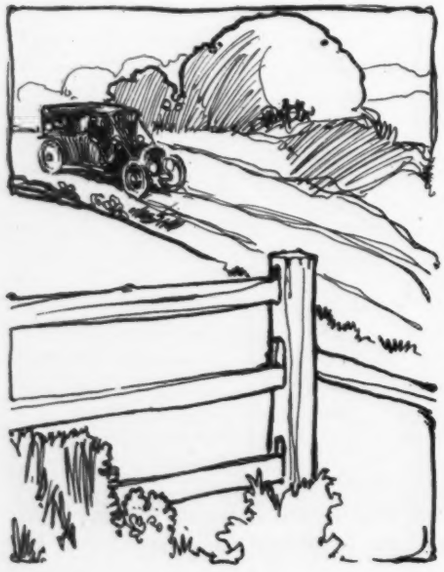
The Cuyahoga Motor Car Co., of this city, is showing at the armory exhibit a car equipped with a battery that will, it is claimed, run 150 miles on one charge. The battery was not announced until it had been tried thoroughly and the company now says that it is ready for the market. The bi-polar battery, as the invention is called, is the same size as the standard type cell batteries and has double the voltage and equal ampere capacity, the bi-polar process having 15-volt units, each unit being composed of an equivalent to six cells of the old type and the equivalent ampere capacity of a twenty-four-cell battery. Another advantage of the bi-polar battery is that whether the electrolite or active acid material be high or low in the battery, the

same working results are accomplished, since the current does not run through the composed parts of the plates but follows horizontally the lines of least resistance, therefore delivering until the battery is discharged the highest possible electrode motive force. There is no danger of fire or explosion from this battery while charging even though the fumes come in contact with fire, it is claimed. The list of car exhibitors at the show follows:

Auto Shop Co.—Thomas and Selden.
Buick Motor Co.—Buick.
Barger Automobile Co.—Cadillac.
Broc Carriage and Wagon Co.—Broc electrics.
Cameron Auto Co.—Cameron.
Commercial Car Co.—Pope-Toledo.
Chisholm & Phillips Automobile Co.—Stevens-Duryea.
Crawford Motor Co.—Jackson.
Detroit Electric Co.—Detroit electrics.
Elmore Motor Co.—Elmore.
Ford Motor Co.—Ford.
Gaeth Automobile Co.—Gaeth.
Hall Bros.—Cartercar and Plymouth.
Lucas & Christenson—Mitchell.
Jewel Motor Car Co.—Jewel.
Harry S. Moore—Stoddard-Dayton and Brush.
Maxwell-Briscoe Co.—Maxwell.
Oldsmobile Co.—Oldsmobile.
Peerless Motor Car Co.—Peerless.
Pullman Motor Car Co.—Pullman.
Price Brothers Carriage Co.—Baker electric.
Reese Motor Car Co.—Royal, Corbin, Columbus electric.
Rambler Automobile Co.—Rambler.
Rauch & Lang Carriage Co.—Rauch & Lang.
Standard Automobile Co.—Packard, Franklin.
Studebaker Automobile Co.—Studebaker, E-M-F.
Charles B. Shanks Co.—Chalmers-Detroit and Stearns.
Winton Motor Car Co.—Winton.
Wingle Motor Car Co.—American Simplex, Midland.
White Co.—White.

Fire Scare at Cleveland

Cleveland, O., Feb. 23—Grave fears were entertained for awhile early this morning that the show would be reduced to a heap of smoking ruins. At 1:30 an alarm of fire rang in from the armory box, and in less than 3 minutes every downtown engine was in position to throw water. A small house next door to the armory had caught fire, and the blaze spread rapidly. Fast work on the part of the department confined the fire to the original house, and the armory itself was not injured. Because of the recent fatal fires in this city the story was scarcely touched by the local newspapers.



Two Weeks' Show Next Time For Detroit

DETROIT, MICH., Feb. 22—The show of the Detroit Automobile Dealers' Association, which came to a close Saturday night, was an unqualified success in interest and attendance, in spite of the fact that no similar attraction of recent years has been compelled to face such unfavorable weather. Blizzards the first 2 days and rain, snow and slush thereafter made a terrific handicap for the show to combat, but it finished up with flying colors. A census of the hall on the final day of the show brought out the fact that in the neighborhood of 100 cars, representing a valuation of $150,000, had been disposed of during the show, while fully three times that number of deals were hanging fire, pending an opportunity for demonstration. The cars sold were purchased virtually without demonstration during show week. While all the distributors had extra cars outside the hall, the terrific weather militated against the efforts of the demonstrators and the clinching argument was usually impossible. This fact was so strongly impressed on the dealers themselves that they agreed to make next year's show of 2 weeks' duration, figuring that, in such a case, the odds in favor of good weather will be greatly increased. The decorations and general arrangements of the hall next year will be about the same, with the addition of some novel features.

The enthusiasm and excellent management of the show once more gave effectual revival to the move that is sure to be attempted in the indefinite future, in the form of a national show where licensed and independent dealers may gather under one roof and transact the large business of the year in the most active center of the industry. An informal organization of this character among the Detroit manufacturers has already been started to work toward this end. Last fall Detroit voted to bond for a municipal convention hall, which will doubtless be available for the show as soon as the two large elements in the trade have arrived at the necessary stage. At that date a strong, concerted pull will undoubtedly be made by Detroit as a municipality and the Detroit manufacturers in their official capacities as members of the trade organizations.

In the meantime the Detroit interests are making a strong play for the selection of Detroit as the starting point for the 1909 Glidden tour. A canvass has been made of the Detroit factories and a number of the manufacturers of the city are on record with letters to the controlling authorities, stating that, in case the tour is to start here, they will, contrary to general custom, enter cars in the event. Last year the trade of this city entirely overlooked the Glidden.

During the show Secretary Robert K. Davis, of the D. A. D. A., announced that the annual endurance run of the organization this year will take place April 27 to 30. This will be the second affair of the kind, but will be conducted on somewhat different lines from last year's tour, which embraced an itinerary that took the cars away from the city for 2 nights and 3 days. The 1909 tour will be to points within reaching distance and return in 1 day. The first day's run will be to Port Huron and return. On the second day the tourists will run to Jackson and back. On the third day the schedule will take the tourists round a triangular course to Pontiac, Rochester, Orion, Oxford, Lapeer, Flint, Fenton and Holly and thence back to Detroit by way of Pontiac. The third day's run is considerably harder than the other two. At night the cars will be parked at the Tuller hotel in Detroit. Rigid rules will govern the competitions and the possibility of spending each night in Detroit is believed to be a very considerable addition to the attractiveness of the tour. Already it is decided that an E-M-F car will be the pathfinder, while another E-M-F will be pacemaker and confetti car.

The closing days of the show were also noteworthy in the proposal of two other formal features for the season. One of these is a motoring organization in Detroit with a downtown headquarters, available the year round. Another is a manufacturers' show for business purposes, to be held at the state fair grounds in August. Both of these projects are only possibilities at present, though the enthusiasts of each are doing some very effective work. The manufacturers' show would be a business affair, pure and simple, and addressed solely to the distributors. It is believed that considerable of the work incident to the national shows might be obviated by such an exhibition, as virtually all the local factories will be ready with their 1910 models by that time.

Syracuse Show Certain

Syracuse, N. Y., Feb. 22—During the last week of March the people of central New York will have an opportunity of witnessing an exhibition of motor cars in the New York state armory. The securing of a show for this city is the direct work of the Syracuse Automobile Dealers' Association which was organized only a few days ago. Although there are only fifteen active charter members and seven associate charter members in the new association they have not let the grass grow under their feet since the night of organization. Responses have come from every quarter endorsing the movement and every encouragement is being given the promoters who are now looking forward to a most successful show. Two kinds of membership will compose the Syracuse Automobile Dealers' Association—full and associate. To be eligible for full membership it is necessary to be a legitimate dealer and

one with an established place of business, or manufacturer, or engaged in the retail sale of new or second-hand cars with an office force and selling organization. An associate member must be a dealer in parts, supplies or accessories; a manufacturer with an established place of business, or those engaged in the repair of cars, or dealers and sub-dealers in central New York who wish to become identified with the organization. Full membership fees will be $25 and associate $10. All charter members are to pay one-half of the full membership fees.

St. Louis Track Scheme

St. Louis, Mo., Feb. 23—Enthused by the more than successful show held last week, the plan of the Million Population Club to build a motor race track at a cost of $100,000 was definitely formulated last night. The track will be oval in shape with at least one straightaway a mile in length. It will be of reinforced concrete construction and the grand stand will have a capacity to seat 10,000 persons. The center area will be utilized for balloon ascension grounds. The committee in charge of the details consists of S. F. Meyerson, chairman; Otto Stifel and John L. Wees, architect. The Million club has adopted a resolution and formed a corporation, capitalized at $100,000. The motorway will be inaugurated in October during the celebration of the centennial of the founding of St. Louis.

The record-breaking motor show which closed here at the Coliseum Saturday night, after awakening St. Louis to what looks like a new era in motoring, may result in complexities that will cost the Michelin Tire Co. its membership in the accessories association and $1,000 besides. According to John J. Behen, chairman of the show commitee, another tire company's local branch has filed a report of the appearance of the Michelin bibendum twins at the St. Louis show, claiming that the Michelin company has violated the association rules by exhibiting at an unsanctioned show. The twins were one of the chief attractions of the show just closed.

Boston's Plans Completed

Boston, Mass., Feb. 24—One week from Saturday night will see the opening of the Boston motor show. The local dealers are practically prepared for it now, and all that remains is to get the carpenters and decorators into the place next week and start transforming it. Mechanics' building is so well situated that it is easy of access and at the same time it is off the main thoroughfares so there will be no trouble in arranging for the demonstrating cars outside the building. The decorative scheme has been decided upon and it will be entirely different from last year. This year it is to be a show of arches, as there will be many of them stretching across the hall illuminating the building wonderfully without making the lights too prominent.

French Makers Fight Over Paris Salon

PARIS, Feb. 16—French makers, or the elite of them, are opposed to an annual motor car exhibition. The Automobile Club of France, the small makers, tire men, accessory manufacturers and dealers are in favor of continuing the salon. Hence, if not exactly a war, there is at any rate a state of dispute. With the object of strengthening their position, the anti-show men recently visited London to attempt to convince John Bull that his Olympia motor car show was a vain thing, and should either be abolished altogether, or held every other year, alternating with the necessary evil in Paris. But John Bull has an idea that if the Paris salon were abolished London would become the motor mart of Europe, and while he sympathized with the Frenchman, he gave him no hope whatever that his show would be closed down. In face of this set-back, the French constructors conferred, and came to the decision that not only would they still oppose the Paris salon, but they would band themselves into an association sacred to big, anti-show constructors, where it would be impossible for the tire potentates and host of accessory men to out-vote them.

The situation at present is, therefore, that 60 per cent of the French makers, comprising all the large world-famed firms, are opposed to sending any of their products to the grand palace; the club, backed up by small makers and accessory interests, is determined to continue a display that always has been a source of profit. The club will go ahead with its show, which doubtless will be held at the end of November and the beginning of December, in the grand palace. Deprived of the big makers, they will admit aeroplane and dirigible balloon manufacturers, motor boats, commercial vehicles, cycles and all accessories. A mixed show of this nature can be made a success, though of course it will have nothing of the eclat of some previous exhibitions; the aeroplane section alone is sufficiently powerful to fill nearly one-half the hall, and the rest of the space will be none too large for the motor cars, accessories, etc., which will ask admittance. Probably, in view of the determination of the club to hold the salon despite the opposition of the big makers, these latter will be obliged to climb down and ask to be taken in also. It is practically certain that a certain number of them will break away, if the show is persisted in, for the bond under which they have placed themselves is not one that is likely to be upheld by law.

It is interesting to note that the anti-show group is also the anti-racing party; but while the big manufacturers monopolize the racing board, they only form a fraction of the club committee dealing with the salon, and are also in a minority on the manufacturers' association which unites with the club for the holding of the show. This explains why after killing the grand prix with the utmost ease it is somewhat difficult to stifle the annual salon.

The French republic possesses a total of 43,550 motor cars in active service. The number seems small compared with the 83,000 claimed to exist in England, but from this latter figure a considerable deduction should be made for double declaration owing to change of ownership. The French figures are obtained from the annual declarations of owners for taxation purposes. Cars in course of manufacture, in stock ready for sale, out of service through old age or accident, are naturally not declared by their respective owners, for declaration means taxation. Thus the French figures, taken on February 1, 1909, only apply to cars on the road or ready to be put on the road, and totally exclude double declarations. Paris is responsible for 7,400 cars, and in this respect is a long way ahead of any other city in France. The rest of the department of the Seine claims 1,950 cars, and is followed by the Rhone district, comprising the manufacturing city of Lyons, with 1,765. Other districts having more than 1,000 are Alpes Maritimes, Bouches du Rhone, North, Rhone and Seine and Oise. Corsica is at the end of the list.

Death of Hub Dealer

Boston, Mass., Feb. 22—Russell Drisko, one of the most widely known salesmen in the motor trade in and around Boston, died last week after a brief illness. He was but 28 years of age. For some years he was with the F. E. Randall company when it had the Stevens-Duryea, and later he was manager of the Bay State Forty. When he resigned his position there he was at the Grout factory for a short time, and then returned to Boston, where he had charge of the local office of the Jones speedometer.

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The Long-Stroke Engine

EUROPE has learned that a long-stroke motor with a given cylinder diameter gives more power than a shorter-stroke engine with the same diameter and America has without specially testing the results accepted the finding of three or four foreign countries. The first official recognition of the superior power of the long-stroke motor appears in the new rules of the voiturette race to be held in France next June and in which a compromise has been arranged between the bore and stroke so that there will be greater harmony in the size of the motors. The rules allow of a diameter of 100 millimeters and 250 millimeters stroke and if the diameter is increased to 120 millimeters the stroke must be reduced according to a certain scale which appears on other pages of this issue, the limit of diameter increase and stroke reduction being to 120 millimeters, or the square cylinder for single-cylinder types. For each increase in the diameter of 1 millimeter there is a reduction of practically 8 millimeters in the stroke.

IT is particularly difficult to know the process of reasoning employed by those who formulated this combination bore-and-stroke rule for the race because a cylinder with a bore of 100 millimeters and 250 millimeter stroke is one-half greater in cubical capacity than a cylinder with bore and stroke each 120 millimeters. There has in the rule of raising-the-bore-and-diminishing-the-stroke been no aim at arriving at an equal piston displacement which would, in spite of the results of last year, go to show that even now the foreigner places much more importance on the big diameter than the long stroke when the power generated is the aim to be gained. It is a case of increase the bore 1 and decrease the stroke 8. The new adjustment of conditions is a half-way step in recognition of the power derived from increasing the stroke but still indicates that the majority of makers prefer in increasing power to do so by adding to the bore rather than by unduly increasing the stroke. What has been done in the single-cylinder motors has been done also in the motors with two and four cylinders, although the amount of increase and reduction varies somewhat.

THIS commendable act by the French rule experts is one step nearer the eventual outcome of the subject, namely, classification by cylinder volume or piston displacement in which the maker is allowed every latitude with reference to the relative length of bore and stroke, his only limitation being that the cubical capacity of each cylinder must not exceed a certain figure. With a piston-displacement rule of this nature the manufacturer who believes in a long stroke can use such to his heart's content, having to reduce the bore whenever the stroke is added to. A flexible rule of this kind works both ways and should go far towards solving the problem as to what is the best relationship to have between bore and stroke. The settlement of this problem is a big and determining factor in motor car construction and it never can be accomplished by allowing any flexibility of the stroke but limiting the bore. It can, however, be partly settled by the ruling adopted in the voiturette race as already alluded to, but it would appear it could be settled much quicker by allowing the same number of cubic inches cylinder capacity and permitting the maker to work out the best bore and stroke. The efficiency of a motor consists in the amount of work it can do with a given consumption of gasoline vapor and that motor performing the most work should be considered the most efficient. If two motors, one with a piston displacement 50 per cent bigger than the other, are allowed to compete, the problem of efficiency is as far from settlement as ever

Why Employ Double Systems?

THE double-system has had a big following in motor car construction within the last few years and is still a strong argument in conjunction with many parts of a car. Buyers have been led to believe it is absolutely essential to have a double set of brakes independent of each other; and, in fact, the existent law in many states makes it essential to have such equipment. At one time two sets were necessary. Those were the days when the brake drums were tiny ones on the rear wheels and when the brake bands or shoes were not to be depended upon in case of a supreme exigency. But today many makers have entirely altered the brake situation and now shoes of ample size are fitted and the friction material employed is such as to endure for long periods and to be practically proof against burning or quick destruction. With this improvement in the size and friction materials the necessity for a double set is greatly reduced; in fact, in some cases entirely eliminated; and in others where brake improvement has not been commensurate with motor improvements there still remains some good reason for the extra set.

UNDOUBTEDLY the reason for two sets of brakes has been the human safety factor which makers have considered. In the early days of motoring a motor was in some cases doubled in power but little increase made in the braking facilities, the maker having entirely overlooked the law of equilibrium that what power the motor is capable of generating in a certain interval the brakes should be capable of destroying in the same or shorter interval. Instead of making one big set the designer looked upon two small sets as a more desirable solution. This doubling has proven to be the easier way out of a difficulty and if followed the designer might have as well added another motor instead of increasing the power of the present motor, which course was actually followed by one concern which exhibited a year ago at the New York show with two four-cylinder motors mounted side by side under the bonnet. The duplicating of motors appeared ridiculous; putting on eight wheels instead of four would look equally ridiculous and would undoubtedly bring forth a storm of criticism suggesting four sufficiently strong wheels. Two transmission sets would be open to criticism, so would the carrying of two radiators, two water pumps, or two oilers, but double brakes and double spark plugs are employed.

IT not infrequently happens that where double brakes are fitted, one set is adjusted for use and the other set adjusted so as to be of scarcely any value, in fact, often entirely of no value. It is a common rule with demonstrators to have only one set in use. Makers who have both sets in adjustment at all times rarely use one set, being content with the pedal brake for all conditions. With single brake sets better connections between the brake pedal or lever and the brake arms are needed and, some makers already realize that although they have actually perfected the brake drum and the brake shoes they have not brought the brake connections along on a par. Designers must realize that the connections from the brake lever to the brake shoe or band are as important as between the steering gear and the steering knuckle. For a brake to fail when needed is as serious as for a steering part to fail and for this reason as great care should be taken in the design and manufacture of all parts in connection with brakes as with those parts of a steering gear. If this care in selection of material, design and workmanship is taken one set of brakes will suffice; and it is meet to expect that with the present reduction of prices and weight advantage will be taken of the double brake situation to reduce both.

FOREIGN TRADE TIPS GIVEN BY UNCLE SAM

WASHINGTON, D. C., Feb. 22—The government's foreign trade promotion bureau is taking an active interest in the exploitation of American motor cars in various foreign countries. Several interesting reports on the subject have recently been received. From Halifax comes the information that there is a good field for the extension of American trade in motor cars, especially in certain parts of the province of Nova Scotia, while in others there will be no demand, owing to the fact that the running of motor cars is restricted to certain days in the week.

There seems to be about the same amount of money in circulation in Nova Scotia as in the New England states. The people are more conservative there than in most sections of the United States, but it is only a question of time and the proper introduction of the line when there will be as many cars used there as among the same population in this country.

While in some cases it is well to open up sales through correspondence, the Nova Scotian market will yield better if a representative from the factory is on the ground to start the trade, after which the representative can make connections with some reliable person to go ahead and push the sale. Manufacturers of motor cars in the United States have to compete with manufacturers of the same line in Canada, which means that the duty on cars coming into Canada has to be met. That this can be done is proved by the fact that almost two-thirds of the machines now in use in Nova Scotia are of American manufacture.

A well-known motor car dealer in Barcelona, Spain, has written an official report for the American government, in the course of which he says that an experience of several years' duration as manager of an important garage in Mexico, during which time he had ample opportunity to study American cars, has convinced him of their superiority over European cars in general. In the first place, he says, the American car is carefully designed for travel over poor roads, many of those in Spain being in a deplorable condition. As a rule European cars are built very low, the tendency being to increase the stability in this manner. The hang of the American car is superb, incomparably superior to that of the European, and in addition to numerous other advantages it possesses the most appreciable one of cheapness.

The American cars best adapted to conditions in Spain are the big ones costing from $4,000 to $5,000, of from 40 to 60 horsepower. Next come the small touring cars of 20 to 30 horsepower, ranging in price from $1,500 to $3,000, while for business and professional men the small runabouts costing up to $1,000 will be in demand. These little cars present great advantages for Spain, being convenient, inexpensive, easy to run and good hill-climbers. Excellent opportunities are offered in Spain to American makers of tires and accessories.

Drays and trucks for commercial use are almost unknown in Spain, and their introduction would undoubtedly be facilitated by familiarity with American systems, which are much cheaper than those imported from France or manufactured in Spain.

Federal Government Tells of Possible Car Business To Be Had in Nova Scotia and Spain

Troubles of Taxicab Company

Washington, D. C., Feb. 20—The troubles of the Terminal Taxicab Co. are multiplying. On February 17 the drivers went out on a strike for the reason that the new schedule of payment for service was unsatisfactory to them. The strike was the result of the adoption by the company of a plan of paying its drivers 20 per cent of their gross receipts, from which is to be deducted the cost of gasoline used by the drivers.

General Manager Fickling stated that this plan has been in successful operation in other cities and is the basis of operation for the largest companies in the country. The Terminal Taxicab Co. decided to adopt the 20 per cent basis only after finding that the method of paying its drivers by the hour proved extremely extravagant and wasteful from the standpoint of the company and had no incentive for the driver to do more than he could avoid doing.

Two Motor Cars for Taft

William Howard Taft, who will become president of the United States on March 4, will have two motor cars in his service while he is in the White House, the machines having been selected for him. One of them is a White steamer and the other a Pierce-Arrow, each of a different type. The steamer was delivered this week, being driven to Washington from the factory at Cleveland. The color is a little unusual, being a harmonious blend of subdued greens, with the United States coat-of-arms painted on each of the doors. The Pierce-Arrow, bought direct from the makers by the government officials, is a six-cylinder 48-horsepower suburban car, the main color of which is blue, with the door panels a rich russet and a single narrow stripe of the same color following the lines of the moulding. The upholstering of the interior is blue broadcloth. Emblazoned on the doors of the car is a fac simile of the great seal of the United States. Mr. Taft will not be the only one of the new administration to take up the motor car, Vice-President-elect Sherman having purchased a Peerless limousine.

resulted in some drivers keeping the taxicabs of the company idle for long periods of time without making returns therefor and being excessively extravagant in the use of gasoline.

There was a rumor that the company would import strike-breakers to take the places of the drivers who went out, but the company has denied any intention of doing so, as it feels there will be need for such a step. Local drivers are being secured as fast as possible and the company expects to have its full complement of cabs in operation within a day or so. An effort at violence was attempted Friday night, when it is alleged that several of the company's dissatisfied drivers threw bricks at two of the cabs, injuring the drivers. Arrests were promptly made and it is likely that no future outbreaks will be made.

New Dealers' Body Formed

Syracuse, N. Y., Feb. 22—With the expressed intention of conducting an annual show, a speed contest, an endurance run and a hill-climbing contest, the dealers of Syracuse came together on the evening of February 17 in the Yates hotel and organized the Syracuse Automobile Dealers' Association, which will be incorporated under the laws of the state of New York. This association will also have in mind the upbuilding of the trade in central New York, and the supervision of the general conduct of the business in this territory. The organization starts off with ten charter members representing eleven makes of cars. There will be three kinds of membership—full, limited and associate. All dealers in central and western New York will be eligible to exhibit at the annual show, as will also every manufacturer of accessories or supplies in this part of the state. The speeding event will be held, if possible, during the week of the New York state fair, which will open this year on September 13 and continue for 6 full days. It has not yet been specified when the endurance contest, or hill-climbing test will be pulled off. These dates will be fixed at a later meeting, when the regulations to cover same will be announced. The officers elected to the association were as follows: President, C. Arthur Benjamin; vice-president, H. D. VanBrunt; secretary, M. W. Kerr; treasurer, H. L. Conde, and C. H. Norris was named as the fifth member of the board of directors and a member of the executive committee.

E-M-F Glidden Pathfinder

Buffalo, N. Y., Feb. 25—Chairman Hower, of the contest board of the A. A. A., announced today that the successful bidder for the pathfinder car of the Glidden tour for 1909 is the Everitt-Metzger-Flanders Co., of Detroit. Accordingly, this company will have the honor of supplying the car with which the route of the sixth annual tour this year will be marked.

FIAT AND KNOX STAR IN NEW ORLEANS MEET

VIEW OF HOMESTRETCH OF TRACK AT NEW ORLEANS, WHERE 3-DAY MEET WAS HELD

NEW ORLEANS, Feb. 22—The 3-day track meet of the New Orleans Automobile Club was the success that had been anticipated and resulted in an unusual crop of records being gathered. It also resulted in a demonstration that on a track like the local oval racing is not as dangerous as claimed. This freedom from accident, however, probably was due to the small fields and the ability of the drivers as well as to the splendid condition of the oval itself. The only mishap occurred Sunday when Ryall crashed into the fence. His car was smashed but he himself escaped uninjured.

Neither Strang nor Robertson was the star, although it had been expected that one or the other of the crack drivers would carry off the honors. Instead, Strang was beaten in every race in which he started, while Robertson only got to the front once and that in a minor event. It was Ralph de Palma who carried off the lion's share of the glory with the Fiat Cyclone, while Mrs. Joan Cuneo, driving the Knox Giant, demonstrated that it is possible for a woman to successfully compete in races with men. Also in the limelight was Bob Burman in the Buick.

Going over the results tonight it is discovered that de Palma went through the meet without a defeat, winning five races. Mrs. Cuneo took three firsts, while Burman landed two. Robertson got the remaining one. With the exception of de Palma, the drivers took turns beating each other. In one race Robertson would be second to de Palma, in another it would be Mrs. Cuneo, and again Strang would be runner-up. The record crop included the lowering of the 10-mile record to 9:11⅘ by de Palma, who also cut the 50-mile to :51:37⅘. Burman in the Buick reduced the 100-mile to 1:42:39⅘. Mrs. Cuneo came to the front with a new record for women for 1 mile, turning the trick in 1:00⅕.

Records Go on Saturday

From a record standpoint the racing of Saturday produced the best results, de Palma and Mrs. Cuneo figuring in the attacks upon Father Time. The Fiat driver landed two marks, getting the competition record in the 10-mile handicap and again beating the previous best in the half-century grind. His 10-mile drive produced 9:11⅘, which beat Barney Oldfield's 9:12⅘, made at New York October 29, 1904. Oldfield's record, too, was for a heavyweight car, whereas the Fiat is in the middleweight division. Strangely enough, also, the Fiat showed greater speed this time than it did at Empire City on Decoration day, 1907, when Cedrino was clocked in 9:47⅕, which stood as a middleweight record on the A. A. A. books. Earlier in the afternoon de Palma essayed to break Oldfield's mark in a drive against time, but 9:17⅘ was his best. Mrs. Cuneo in the Knox also came into the limelight through her daring work, her attack on her own mile record of 1:06, made at Empire City, netting her 1:00⅕.

The half-century was supposed to be the feature event of the day, but for excitement it was eclipsed by the 10-mile handicap in which de Palma started from scratch. In this the Fiat man cast caution to the wind and risked everything to win. He slammed around the corners and skidded on the turns but he caught his men and won handily. An idea may be had of his daring when it is remembered that in the seventh mile de Palma made the circuit in :51⅘, which is within ⅘ second of his own world's record for that distance. Then, too, his 9:11⅘ was made from a standing start, whereas the 9:17⅘ was registered from a flying start. Ryall in the Matheson and Strang in the Isotta clashed several times in this handicap, often bumping hubs in their fight. Robertson beat out his rival for the place.

De Palma, Robertson, Strang and Mrs. Cuneo started in the 50-mile event and for 15 miles it was a pretty struggle. Before this Strang was lost through carbureter troubles and the other three were running hub and hub. Robertson ran into tire trouble in the thirty-fifth mile, the Simplex skidding to the fence on the upper turn. Robertson immediately made a change of casings but in doing so he lost two laps which he never was able to make up. The time, 51:37⅕, was claimed as a competition record, but it was slower than Oldfield's mark of 48:40⅕, which was made in time trials in a Peerless at Fresno, Cal., December 13, 1904. Summaries:

One-mile record trials—De Palma, Fiat, :54 1-5; Mrs. Cuneo, Knox, 1:02 1-5; Robertson, Simplex, 1:01 3-5; Strang, Isotta, 1:02 3-5.

RALPH DE PALMA IN FIAT CYCLONE, STAR AT NEW ORLEANS

Ten-mile record trial against 9:12 3-5—De Palma, Fiat, 9:17 2-5.

Fifty-mile free-for-all—De Palma, Fiat, won; Mrs. Cuneo, Knox, second; Robertson, Simplex, third; time, 51:37 4-5.

Ten-mile handicap—De Palma, Fiat, scratch, won; Robertson, Simplex, 33 seconds, second; Strang, Isotta, 33 seconds, third; time, 9:11 2-5, world's record.

Century Record Smashed

That the track was lightning-fast was again demonstrated on Sunday, when the 100-mile record was slashed by Burman in the Buick which he drove in the grand prix at Savannah. This century grind took the place of the 24-hour race that was at first picked out for the feature of the meet. It was an open event but only three cars faced Starter Wagner—Burman in the Buick, Strang in the Isotta and Robertson in the Simplex. Robertson jumped away first, but Burman at once gave pursuit and caught his man at the end of the first mile. After that he never relinquished the lead with but one exception. Not one bit of trouble did he have and his daring driving made the crowd of 10,000 people shout its head off from excitement. Robertson vainly pursued him and at the end Burman had cut a big slice off the century record. Strang never was prominent, giving up the fight in the seventy-fourth mile because of trouble with his steering gear. Burman' time for the century was 1:42:39⅘, which wipes off the slate the 1:53:21⅘, made in 1905 by Jap Clemens in a National when that car was establishing the 24-hour record that stood for such a long time.

One other record was tied as a result of the day's work, Mrs. Cuneo again coming to the front with the Knox and equaling her mile mark of 1:00⅕—made Saturday. The Glidden tour heroine showed complete mastery of track lore and took the turns with just as much daring as did Burman or de Palma. While she was engaged in this hazardous undertaking her husband and 8-year old son sat in the grand stand, apparently unconcerned and confident of Mrs. Cuneo's ability to take care of herself.

Only One Accident

It was on this day that the only real accident of the meet occurred, but luckily no one was injured. It came in the opener, a 5-mile for the Klaw & Erlanger trophy, in which none but amateurs could compete. Jimmy Ryall and the Matheson faced the starter, but on the first mile Ryall took the turn too wide coming into the home stretch and the Matheson went to the fence and into it, the car being demolished. Ryall's escape was extremely lucky considering that he was going at a mile a minute at the time. Mrs. Cuneo captured the trophy in this race, finishing the 5 miles in 5:08⅕.

As usual de Palma came into the limelight, capturing the 10-mile free-for-all and making the best time in the mile trial, in which he registered :52⅘. The other race on the card was a 10-mile for the Klaxon trophy, in which Mrs. Cuneo again distinguished herself by beating Donnelly in a Packard. Summaries:

Apperson Climbs Hill At 60 Miles An Hour

Los Angeles, Cal., Feb. 22—Special telegram—Edgar Apperson, driving an Apperson Jackrabbit, today succeeded in repeating his last year's success, when he won the free-for-all in the annual Pasadena hill-climb. The record for the hill was beaten, Apperson going up in 1:24 as compared with 1:36¼, which means a pace of 60 miles an hour and from a standing start, and which time is 14½ per cent better than in 1908. The hill averages about 11 per cent, with the steepest part 22 per cent. This distance is 1.4 miles. Second to the Apperson was Barney Oldfield in a Stearns, his time being 1:29⅕. A Stoddard-Dayton made the climb in 1:36⅗. The trophy, a cut glass punch bowl, is offered by the dealers' association. It has to be won three times. The car Apperson drove is the one that was in the last Briarcliff.

Five-mile race for Klaw & Erlanger trophy, amateur—Mrs. Cuneo, Knox, won; Donnelly, Packard, second; time, 5:08 1-5.

Ten-mile free-for-all—De Palma, Fiat, won; Robertson, Simplex, second; Burman, Buick, third; time, 10:03 2-5.

One-mile against time—De Palma, Fiat, won; time, :52 4-5; Burman, Buick, second; time, :58 3-5.

Ten-mile open, Klaxon trophy—Mrs. Cuneo, Knox, won; Donnelly, Packard, second; time, 10:12 1-5.

Mile trial against woman's record—Mrs. Cuneo, Knox; time, 1:00 1-5.

One hundred-mile race, open to all stock cars—Burman, Buick, won; Robertson, Simplex, second; time, 1:42:39 2-5.

Windup of the Meet

The brillian work of Saturday and Sunday brought out a big holiday crowd on Monday, and the afternoon emphasized de Palma's claims to stellar honors. Again the 10-mile handicap produced the most excitement and again Oldfield's mark was beaten, although the time was a shade slower than on Saturday. Again de Palma and the Fiat dashed under the wire first amid the enthusiastic clamor of the spectators. This time, however, it was Mrs. Cuneo who gave battle to de Palma, while Burman in the Buick was another starter, in addition to Strang and Robertson. The handicapper had again placed the Fiat on scratch, with the Simplex at 45 seconds and the Knox, Isotta and Buick at 50 seconds. It made a pretty ladder and de Palma gained the front only after a struggle. He was chased across the final tape by Mrs. Cuneo, who was about an eighth of a mile back, while Robertson, Strang and Burman trailed in the order named.

Race Conditions Changed

By this time de Palma had become such a favorite that it was demanded that he drive in the 50-mile. In order to let him in, though, it was necessary to alter the conditions and make it a free-for-all. It was another victory for the Fiat, de Palma showing the way home to Strang, Robertson and Mrs. Cuneo in the order named, while the time made was 49:52⅖.

Robertson scored his only win of the meet in the 5-mile stock car event, in which he derived some satisfaction when he trimmed his old rival, Strang. He also evened his score with Mrs. Cuneo, who ran third, while Burman in the Buick slid into fourth place.

Burman in the Buick and Scheifler in the Jackson were the contenders in the 5-mile event for medium-priced stock cars, and Burman won the decision in 5:40. Mrs. Cuneo scored in a 5-mile for amateurs, in which she outfooted Donnelly in a Packard. Mrs. Cuneo also drove a 5-mile exhibition against time and the Knox Giant proved as speedy as its driver was clever, turning the distance in 5:05. Summaries:

Five-mile free-for-all, medium priced stock cars—Burman, Buick, won; Scheifler, Jackson, second; time, 5:40.

Five-mile free-for-all, stock cars any price—Robertson, Simplex, won; Burman, Buick, second; Mrs. Cuneo, Knox, third; time, 5:07.

Five-mile against time—Mrs. Cuneo, Knox; time, 5:05.

Five-mile free-for-all, amateurs—Mrs. Cuneo, Knox, won; Donnelly, Packard, second; Scheifler, Jackson, third; time, 5:15 2-5.

Ten-mile handicap, free-for-all—De Palma, Fiat, scratch, won; Mrs. Cuneo, Knox, 50 seconds, second; Robertson, Simplex, 45 seconds, third; time, 9:12 1-5. Strang, Isotta, and Burman, Buick, also drove.

Fifty-mile free-for-all—De Palma, Fiat, won; Strang, Isotta, second; Robertson, Simplex, third; Mrs. Cuneo, Knox, fourth; time, 49:52 2-5.

MRS. JOAN CUNEO AT WHEEL OF THE KNOX GIANT

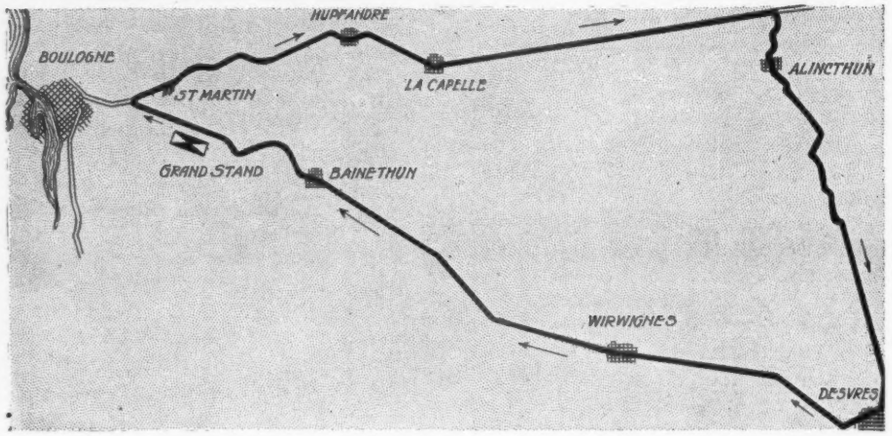
VOITURETTE EVENT EUROPE'S ONLY RACE

PARIS, Feb. 16—So far only one European road race has been scheduled for the season of 1909, that one being the voiturette event promoted by L'Auto, for which a course has been selected, a date picked and enough entries promised to insure its success. Although the lists do not close until May 21 there are enough cars tentatively nominated to make it look as if there would be sixty or more in the contest. The race will be run June 20.

Most surprising of all is that Great Britain probably will enter from fifteen to twenty of the little machines, which is taken here to mean an English invasion of the continent. Seven other nations will be represented in the race, one of which probably will be America, for it is said here that there will be a Buick entered. Besides England and America, France, Germany, Italy, Austria, Belgium and Switzerland will be in the affair. Sizaire-Naudin, Delage, Peugeot, Alcyon, Thieulin, Ravel, Bazelaire, Crespelle and Rolland-Pilain will race for France; three Adlers and as many N. S. U. machines will come from Germany. Austria will have the Laurin-Klement, three Martinis will run for Switzerland, while Italy will contribute three Isottas and as many Lancias. The fees are graded—$100 for a single car, $160 for two of the same make and $200 for a full team of three.

The location of the course pleases the British, who find it as near their base of supplies as the French, it being almost as easy for the English to go to Boulogne as the French. This accounts for the unusual interest being displayed in the event by John Bull and the promise of at least a third of the prospective entries from the United Kingdom.

The modification in the rules regarding cylinder area is doubtless responsible for the increased foreign entries. Formerly bore was limited and stroke left unfettered. This produced an exceptionally long stroke engine, last year's single-cylinder winner having a bore of 3.9 inches and a stroke of 9.8 inches. It is now considered that the efficiency of a long stroke engine has been fully demonstrated, no technician being found to maintain that engines of equal bore but varying in stroke are of the same power. Thus, though the long stroke is still encouraged, bore is not rigorously limited. For a single-cylinder engine it is permitted to increase the bore above 100 millimeters, 3.9 inches, to a maximum of 120 millimeters, 4.7 inches, on condition that the stroke is decreased in proportion. Starting from 100 by 250 bore, and stroke, 9.8 inches, the former may be increased to 120 millimeters, 4.7 inches, on condition that the latter is decreased to 120 millimeters, 4.7 inches, the stroke being stipulated for each millimeter bore from 100 to 120 millimeters. The same applies to multiple-cylinder engines. The following is a complete table of the sizes permissible under the rules:



MAP OF CIRCUIT THAT WILL BE USED FOR VOITURETTE RACE

SINGLE-CYLINDER ENGINES

Bore		Stroke	
Millimeters	Inches	Millimeters	Inches
100	3.937	250	9.84
101	3.97	238	9.37
102	4.01	230	9.05
103	4.055	222	8.74
104	4.09	213	8.38
105	4.133	205	8.07
106	4.17	197	7.75
107	4.21	189	7.44
108	4.25	183	7.20
109	4.29	176	6.92
110	4.33	170	6.69
111	4.37	164	6.45
112	4.409	159	6.25
113	4.44	153	6.02
114	4.48	148	5.82
115	4.52	143	5.63
116	4.56	138	5.43
117	4.60	133	5.23
118	4.64	128	5.03
119	4.68	124	4.88
120	4.72	120	4.72

TWO-CYLINDER MOTORS

Bore		Stroke	
Millimeters	Inches	Millimeters	Inches
80	3.14	192	7.55
81	3.18	182	7.16
82	3.22	173	6.81
83	3.26	165	6.49
84	3.307	157	6.18
85	3.34	150	5.90
86	3.38	143	5.63
87	3.42	136	5.35
88	3.46	130	5.11
89	3.50	125	4.92
90	3.54	120	4.72
91	3.58	115	4.52
92	3.62	110	4.33
93	3.66	105	4.13
94	3.7	100	3.93
95	3.74	95	3.74

FOUR-CYLINDER MOTORS

Bore		Stroke	
Millimeters	Inches	Millimeters	Inches
65	2.55	140	5.51
66	2.59	132	5.19
67	2.63	125	4.92
68	2.67	118	4.64
69	2.71	111	4.37
70	2.75	105	4.13
71	2.79	99	3.89
72	2.83	93	3.66
73	2.87	87	3.42
74	2.91	81	3.18
75	2.95	75	2.95

BOULOGNE CIRCUIT—VILLAGE OF ALINCTHUN

Considerable difficulty was experienced in finding a suitable course for the race. The promoters desired to get as near Paris as possible, but the best available course was found at Boulogne, which is 150 miles from the French metropolis. This course is somewhat similar to the Dieppe circuit over which the last grand prix was run. It is triangular and about 25 miles around, with the three points of the triangle at Fourche at St. Martin, Alincthun and Desvres. On the first leg the racers will

follow an undulating national road which runs through the forest at Boulogne, the last 8 miles of which is a straightaway, which will permit of great speed. At

BOULOGNE CIRCUIT—WINDING STRETCH OF HIGHWAY

Alincthun there is a sharp turn, after which the road winds through the forest of Desvres to the town of the same name.

Turning right at this point, the circuit immediately swings into another bend, which, however, is not as sharp as the other, but which affords a hill-climbing test for the racers, for the grade is from 12 to 13 per cent. Passing this, there comes a switchback road and then a mile climb up a 9 per cent grade which is so sporty that it cannot be rushed. This is the Baincthun hill, which is twice as long as the famous Gaillon hill but of about the same grade. It is the one used by the local club for its annual hill-climb, so it may be imagined it is far from being easy. But after that is surmounted the racers will find easier going, there being a straight level run to the turn at Fourche.

ROUGH GOING FOR REGAL

Toledo, O., Feb. 22—After 6 hours of gruelling driving through mud, slush, ice and snow so deep as to rip off four sets of tire chains and literally tear to pieces a new tire casing, George Wilcox and Richard P. Byrne, of the Mora sales agency, Syracuse, and William Smith, driver from Detroit, reached the Boody house last night at just 9 o'clock, in a Regal touring car, dubbed for the trip "The Snowball Limited."

With Syracuse as their objective point the trio left Detroit Monday at 2:10 and for a brief period while traversing the paved streets enjoyed fair driving. But the moment the pavements were left their woe and grief began. At best in the most ideal weather the road between Detroit and Toledo is terrible and tonight those who saw "the Snowball Limited" and who are familiar with the roads are loath to believe the trip possible.

At times on the trip the car sank on one side so deep that the running board was flat on the surface of the road its entire length. The trip was hazardous, too, in that it was always the chance of sliding on the uncertain roadbeds into the ditches, a performance that was averted by inches three times on the trip. Trou ble was encountered a few miles out of Monroe coming in from Detroit. At this place there is a stretch of 2 or 3 miles that seemed bottomless mud and mire. Then there were huge chunks of ice to rip and tear the chains and casings. Still, the car stood it all and survived the rough going which was encountered in this the preliminary stages of the tough winter run.

But the trip was not without its fun and enjoyment. The day was fairly warm and bright and this served to keep up the spirits of everybody. Just a few miles out of Rockwood the Snowball Limited came up to a load of hay marooned safely and surely, almost hub-deep in a fine big chuck hole. Taking to the ditch the little Regal passed the obstruction and, safely ahead, stopped to render assistance. A line was attached to the tongue of the wagon, the other end being fastened to the car. A few brief tugs and the big load of hay was out of the hole and able to continue its trip.

The car covered with mud and grime but without a single mechanical deficiency was driven to the Atwood garage on Monroe street, where it was left for the night, while Wilcox and Byrne rested for the tough journey that faced them before they reached their destination.

BOSTON'S CLUB DILEMMA

Boston, Mass., Feb. 24—The problem that is now being discussed in Boston is whether there will be one large motor club or two small ones. Such a sudden change as has been effected in plans for a new club created some surprise when the matter was partly threshed out last week at a meeting called to elect officers and adopt by-laws for the proposed Boston Motor Club. The business transacted did not go farther than discussing and adopting the report of the conference committee and empowering the committee to continue negotiations until now it seems probable that there will be an amalgamation of the Bay State A. A. and the new club. The status of the two organizations are now about as follows: The new club will be formed, but without electing officers; the officers of the Bay State Club will all resign; there will be a meeting at which members of both clubs will elect officers for one club; the new club will go in with the Bay State A. A. at the Hotel Carleton; changes will be made in the by-laws of the Bay State A. A., and finally, the Bay State A. A. and the Boston Motor Club will drop their names, if necessary, and a new name chosen for what will be one organization. If this move is carried out there will be a club of some 500 members that will do much to help the motor industry in Boston. The matter will be settled shortly, as the members of the Bay State A. A. will first have to ratify the move planned by its officers before final action is taken. All motoring Boston is awaiting the result.

BOULOGNE CIRCUIT—ROAD NEAR DESVRES

Legal Lights and Side Lights

CHICAGO WHEEL TAX SUSTAINED

EFFORTS of Chicago motorists to defeat the wheel tax which the city is collecting have come to naught, the Illinois supreme court, in a decision handed down last Friday in the case of Joseph D. Ayres vs. the city of Chicago, sustaining the city. The opinion was delivered by Justice Vickers, Chief Justice Cartwright and Justice Dunn dissenting. In reality the case was the one brought by the Chicago Motor Club and the Chicago Automobile Trade Association through Attorney William H. Arthur, whose contention was that the wheel tax ordinance was invalid because it conflicted with section 13 of the motor vehicle law "insofar as said ordinance relates to or affects the use and operation of motor vehicles upon the public ways of the state." Arthur also claimed the tax was invalid because "it is in violation of the uniformity and equality provisions of the constitution of this state, in that it requires all persons who own motor vehicles with seats for two or more persons to pay a license tax, while persons using or operating motor cars with a seat for one person only, motor cycles, tricycles and bicycles are not required, under and by virtue of the provisions of said ordinance, to pay any license or tax," which Arthur insisted was unjust and illegal discrimination. After reviewing the motor vehicle statute, the supreme court says:

The foregoing review of the motor vehicle statute is sufficient to show that the statute is intended to be regulatory and its passage is referable to the police power of the state. Motor cars have but recently come into general use. It is a fact within the common knowledge of most persons that motor cars, other than those used in particular localities for hire, are extensively used in this state in making tours of considerable distance, in the course of which many cities, villages and towns would be visited. The legislature has by the motor vehicle act taken the subject of the regulation of the speed and operation of motor cars out of the hands of local authorities and passed the motor vehicle law as a general, uniform regulation, applicable alike to all municipalities of the state. The effect of this law manifestly is to abrogate all municipal ordinances designed to regulate the use of motor vehicles passed prior to the time such law went into force and to deprive such municipalities of the power to pass such regulating ordinances in the future. The necessity for such uniform law was a matter for legislative determination, with which the courts have nothing to do. Clearly, the purpose of the legislature was to pass a new and complete law designed to take the place of all municipal ordinances or rules regulating the equipment and operation of motor vehicles.

Appellants contend that the wheel tax ordinance, the enforcement of which is sought to be enjoined, was passed in violation of section 13 of the motor vehicle law above quoted. The wheel tax ordinance was before this court in Harder's Fire Proof Storage and Van Co. v. City of Chicago, 235 Ill. 58, and Harder v. City of Chicago, id. 294, and the ordinance in question will be found set out at large on pages 60 and 61 in the statement preceding the opinion of this court in the first of the above cited cases. We do not deem it necessary to set out the provisions of the said ordinance again. In the two cases above referred to, the validity of this ordinance was assailed upon other grounds than those relied on by appellants in the case at bar. In the case of Harder's Fire Proof Storage and Van Co. v. City of Chicago the ordinance in question was held to be a revenue measure, and as such authorized by the amendment to clause 96 of the city and village act passed in 1907. Viewing the ordinance in question as a proper exercise of the taxing power of the city of Chicago under the amendment to clause 96, supra, it is clear that appellants' contention that the ordinance is an attempt by the city to regulate the use and operation of motor vehicles in violation of section 13 of the motor vehicle law can not be sustained. The right of municipalities to levy a tax upon vehicles, which tax, when collected, shall be kept as a special fund for the repair and improvement of the streets and other public ways of the municipalities, was settled by the decision of this court in the wheel tax cases already referred to. The nominal fee of $2 that is paid by the owner of a motor vehicle to the secretary of state is not more than sufficient to cover the expenses of carrying out the provisions of the law by the secretary of state, and can not be regarded, in any sense, as a tax.

Section 13 of the motor vehicle law provides that "no owner of a motor vehicle who shall have obtained a certificate from the secretary of state as hereinbefore provided shall be required to obtain any other license or permit to use or operate the same, nor shall such owner be required to display upon his motor vehicle any other number than the number of the registration seal issued by the secretary of state." It is contended that the ordinance in question requires appellants to obtain a license or permit to use their vehicles in the city of Chicago in addition to the license or permit obtained from the secretary of state. It is true that the ordinance provides for the issuing of a "license" to the owners of vehicles upon the payment of the tax as required by the ordinance, but construing the word "license" as used in the ordinance, in connection with the general context of the ordinance, it is clear it is used as equivalent to "tax," and the issuing of a license to the owner of a vehicle under such ordinance is, in effect, no more than giving a receipt for the annual tax which he has paid. The provision in section 4 of the ordinance requiring a metal plate bearing the number and the name of the class to which such vehicle belongs to be affixed in a conspicuous place upon the right-hand side of the vehicle does not apply to the owners of motor cars. Appellants are not required by said ordinance to display any number upon their vehicles other than that furnished by the secretary of state. The only provision of said ordinance with which appellants are required to comply is to pay their annual taxes on their motor cars and receive from the city clerk a receipt or a license evidencing such payment. There is nothing in the ordinance that purports to regulate the manner of equipping or operating a motor vehicle.

Construing the motor vehicle law as a regulatory statute passed under the police power of the state, and the ordinance as a revenue measure passed under the taxing power of the municipalities, the ordinance does not conflict with the motor vehicle statute. If, however, such conflict existed, it would not necessarily follow that the ordinance in question was invalid. The amendment to clause 96, supra, was passed December 31, 1907, at a special session of the general assembly and went into effect the same day. The motor vehicle law was passed at the regular session of the general assembly of 1907 and went into effect on July 1 of that year.

It having been settled by this court in the wheel tax cases above referred to, that the ordinance in question was duly authorized by the amendment to clause 96, supra, it would seem to follow that clause 96, being the later act, would control, and in case it should be determined that it was inconsistent with the provisions of the motor vehicle law, then the motor vehicle law, in so far as the same was inconsistent with the powers granted by clause 96, would be repealed by implication. Repeals by implication are not favored by the law—Hunt v. Chicago Horse and Dummy Railway Co., 121 Ill. 638—and courts will, if possible, so construe two legislative acts that each will have the force and effect intended by the legislature. Still, where it appears to the court that it is impossible to give effect to both acts, the latest in point of time will prevail.

But in the case at bar we do not find it necessary to invoke this rule. We think that any apparent conflict between section 13 of the motor vehicle law and the ordinance under consideration is removed by the construction of the two acts which has already been discussed.

Appellants contend that the ordinance in question is unconstitutional and void because it unjustly discriminates between persons coming within the same class, in that it levies a tax upon motor cars with seats for two persons and another tax upon motor cars with seats for more than two persons, and does not levy any tax upon motor cars with a seat for only one person. This contention is based upon the following averments in the bill: "Your orators further represent that the said ordinance so passed by the city of Chicago by its common council, as aforesaid, is invalid because it is in violation of the uniformity and equality provisions of the constitution of this state in that it requires your orators and all other persons similarly situated to pay a license fee to the said city of Chicago, as provided in said ordinance, before they will be permitted to operate and use their said motor cars upon the streets, avenues and alleys of said city, while other persons between whom and your orators there is no actual and substantial difference, to-wit, persons using or operating motor cars with a seat for one person only, motor cycles, tricycles and bicycles, are not required, under and by virtue of the provisions of said ordinance, to pay any license fee to the said city of Chicago as a condition precedent to the operation or use of the vehicles last mentioned upon the streets, avenues and alleys of said city, thereby unjustly and illegally discriminating against your orators and others similarly situated. Your orators further represent that a large number of such motor cars with seat for one person only, motor cycles, tricycles and bicycles have been and now are operated upon the streets, avenues and alleys of said city; that many of the said motor cars last mentioned are more powerful, heavier, of greater value and do as much or more damage to the pavements of said streets, avenues and alleys than many of the said motor cars of your orators with seats for two or more persons; that many of said motor cycles and tricycles are heavy vehicles and operated by powerful engines, and are capable of doing, and actually do, as much or more damage than many of the said motor cars of your orators for which a license fee is required of your orators, as aforesaid.

The constitutionality of the ordinance is a question of law for the court, City of Peoria v. Calhoun, 29 Ill. 317. Whether or not motor cars are constructed and in operation with a seat for only one person is a matter purely of fact, and if the fact exists at all, it is certainly not of such general notoriety that courts will take judicial notice of it, and determine, as a matter of law, the constitutionality of an ordinance with reference to the existence of such fact. If in the case at bar the demurrer should be overruled and appellee should answer the bill, denying that motor cars or other motor vehicles having the substantial characteristics of a motor car with a seat for one person only were in operation and use in the city of Chicago, it is apparent that an issue of fact would thus be made up, upon the determination of which by the court or jury the constitutionality of the ordinance in question would depend. Thus tested, a law or an ordinance might be held constitutional to-day by one court or jury and unconstitutional to-morrow by another court or jury. The constitutionality of laws cannot be made to depend upon the uncertain and conflicting determination of courts or juries upon questions of fact depending upon extrinsic testimony. If it cannot be made to appear that a law or an ordinance is in conflict with the constitution by argument deduced from the language of the law itself or from matters from which a court could take judicial notice, then the act must stand. The testimony of witnesses cannot be received for the purpose of proving that in carrying out a law or an ordinance some provision of the constitution may be violated, People v. Durston, 119 N. Y. 569, and cases there cited. We think that the court properly sustained the demurrer to this portion of appellants' bill for the reason that it seeks to raise an issue of fact upon which the alleged constitutionality of the ordinance depends.

Finding no error in the decree of the court below the same is affirmed. Decree affirmed.

Chief Justice Cartwright, dissenting, made the following report:

The motor vehicle law, which is a special law relating to one class of vehicles, provides that no owner of a motor vehicle who has procured the required license from the secretary of state shall be required to obtain any other license to use the same, nor be excluded or prohibited from or limited in the free use of his motor vehicle upon any public street, avenue, road, turnpike, driveway, parkway or any other public place, nor be required to comply with other provisions or conditions as to the use of motor vehicles except as provided in the act. The ordinance declares it to be unlawful for any person to use any vehicle in the transportation of persons or property upon the streets, avenues or alleys of the city without having procured the license therein specified for such use. The act and ordinance are in irreconcilable conflict, which is not obviated or removed by regarding the act as a regulation under the police power and the ordinance as an exercise of the taxing power. The validity of the act is not questioned, and being a special act relating to motor vehicles it has not been repealed by the general act amending the City and Village act, Town of Ottawa v. County of La Salle, 12 Ill. 339; Covington v. City of East St. Louis, 78 id. 548. The general act gives cities and villages power to direct, license and control wagons and vehicles conveying loads and says nothing about taxing vehicles. But, regarded in any light, the ordinance conflicts with the motor vehicle act.

The learned counsel for the appellee have not taken the position that facts showing unjust discrimination, and the consequent invalidity of an ordinance, could not be alleged and proved, but their argument is that the facts alleged are not sufficient, and that the city is authorized to require a license for a vehicle of one class without requiring any license for a different kind of vehicle. I do not regard the case of People ex rel. v. Durston, 119 N. Y. 569, where the court had under consideration the question of cruel and unusual punishment for crime, as applicable to this case.

Justice Dunn concurred in the views expressed in the foregoing opinion of Chief Justice Cartwright.

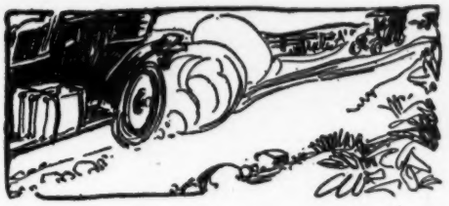
Attorney Arthur points out that the chief justice's opinion coincides with the contentions made by him as representative of the Chicago motorists. "To me the decision looks like one of expediency rather than law," commented Arthur. It is hardly probable that the motorists will carry the case to the United States supreme court.

REMEDYING AN EVIL

An act to amend the penal law has just been introduced into the assembly of the state of New York now in session at Albany, whereby any person using a motor car or vehicle other than his own, for profit-earning purposes without the consent of the owner, shall be guilty of larceny. The amendment to the penal law as introduced reads as follows: "Any chauffeur or other person who shall take, or cause or permit to be taken from a garage, stable or other building or place a motor car, motor vehicle or any other kind of vehicle, and operate or drive, or cause the same to be operated or driven for his own profit, use or purpose, without the consent of the true owner, steals the same and is guilty of larceny and shall be punishable accordingly." The act has been read once, and referrred to the committee on codes. If passed it is to go into effect on September 1, this year.

NINE BILLS OFFERED

One of the features of the 1909 sessions of the New York state senate and assembly at Albany is the grist of legislation relating to regulation of the motor car that has been introduced. Thus far there have



been no fewer than nine bills, or amendments to existing laws, introduced into the assembly and three in the senate, and all aimed at the owner or driver of a motor car. An act for the "protection of persons on public highways, roads, streets, avenues and places" has been introduced by Senator Grady, and has been read twice and ordered printed, and when printed will be referred to the committee on the judiciary. This act specifies that "every person who rides, drives, operates, controls or directs any carriage, wagon, motor car or other vehicle or conveyance or a bicycle upon any public highway, road, street, avenue or place going at a speed which is then and there dangerous to other persons, shall be guilty of a misdemeanor and upon conviction shall be imprisoned for not less than 30 days and fined not less than $100. And if any injury to any person be caused by, or results from such dangerous speed, the person or persons convicted of so causing such injury shall be imprisoned not less than 1 year or more than 2 years, and fined not less than $1,000 nor more than $2,000; and if such injury so caused to any person shall result in the death of that person, the person convicted of so causing such injury and death shall be guilty of manslaughter in the second degree." The act also goes on to say that any driver who refuses to stop for a constable or other authorized person for breaking the speed limit shall upon conviction be imprisoned not less than 30 days and fined not less than $100 in addition to the other penalties imposed in the act. Any person having been twice convicted of the violation of the act will be prohibited from driving henceforth, and such a conviction will cause a chauffeur to forfeit his license. No penalties imposed under the act will prevent the offender from being sued for damages in a civil action for injury to property. The act is to take effect immediately if finally passed and signed.

REX STARTLES SUPERVISORS

Former Assemblyman John H. Rex, of Norristown, Pa., is one of the not inconsiderable number of public men who is not prepared to admit that motor cars wear down a properly-built road faster than do horse-driven vehicles. At a meeting of the road supervisors of Montgomery county there last Thursday evening Mr. Rex asserted that the outcry about the dire effects of motor cars on road surfaces was to a large extent exaggerated. He suggested a practical test of the relative wear and tear caused by both classes of vehicles and offered to contribute to the construction of a stretch of parallel roads, built exactly alike, on one of which only horse-drawn vehicles shall be allowed and on the other motor cars only. And he said he was prepared to subscribe to a law taxing both classes in proportion to the damage inflicted by each, so confident was he of the results of such a test. Mr. Rex had been invited to address the supervisors on the subject of taxing motor cars to maintain improved highways, and what he told them was a-plenty, and then some—and it was all to the point, too. All taxes assessed against motor cars, he said, should be assessed and collected by state authority only, paid into the state treasury for the large traveling radius of the motor car differentiates it from those vehicles designed for home uses merely. Local taxation would mean practically giving the bulk of the revenue to a few townships near to the Philadelphia county line, because there are some townships in Montgomery county without a single motor car. A state tax, therefore, would be more uniform and equitable. Mr. Rex also advocated bonding the state even up to $50,000,000 in order to build state highways, and asserted that the money so expended would be returned manifold to the people by reason of the increased valuations and the heavier consequent treasury receipts.

BELGIUM CONSIDERING NEW BILL

During the coming session of the chamber and senate of Belgium the new motor car law will come up for discussion, and already motorists consider it a certainty that the project will become a law, as the majority of members in each house are anti-motorists. Among the principal articles or rules the following are the most important:

Article 3—Any person driving a motor car without having been given by the proper authorities the required driving permit will be sentenced to from 1 day to 1 month imprisonment and fined from $1 to $100. Furthermore, the offender may be deprived of the right or permission to drive a motor car during a period of 3 months. If the offender is caught or found to be guilty of the same offense a second time during the course of the same year his second punishment will be double the first one.

Article 4—The same punishment as referred to in article 3 will be applied to the driver of a motor car who is found to be driving while under suspension or sentence not to drive.

Article 5—The permit to drive may be taken away for a period of from 8 days to 2 months for violation of state or city laws or ordinances. If a driver is found guilty twice within the year the second punishment will be double of the first and if found guilty three times he will be jailed for a period of from 2 months to 1 year.

Article 7—Any driver who will have been suspended or not allowed to drive a car twice within a period of 3 years may have his license to drive canceled or taken away for life.

Article 8—Any driver having caused with his motor car an accident to a person or to a car in which there were people and resulting in the latter being hurt must immediately stop and notify the secretary of the town, city or village in which the accident happened or at any rate within a period of 24 hours following the accident. If the driver fails to comply with the rule his driving permit will be taken away temporarily or even permanently, according to the seriousness of his offense.

Articles 3, 4 and 8 are within the jurisdiction of the justices of the peace, while the other articles are to be taken up by the courts. The project also provides for the establishment at the department of agriculture of a "casier automobiliste." This will consist of a filing department

where bulletins will be on record showing the various sentences imposed upon motorists. A civil motor law also has been prepared. Some of its provisions are considered more drastic than those of other continental countries. The principal provisions are:

Article 12—In case of an accident caused by a motor car upon a public road or highway, the owner of the vehicle and the driver will be held jointly responsible for and must repair the damage done even if the fault is not theirs.

Article 13—The owner and driver will not be held responsible if they are able to prove that the accident was due to a "cas de force majeure." The breaking of parts of the vehicles and any cause inherent to the use of the vehicle are not considered as "force majeure."

Article 14—The owner and the driver may be held partly or entirely exonerated if they prove that the accident was due or was caused entirely or partly by the victim.

Article 15—The owner of the motor car is also exonerated if he proves that his car was used by the one causing the accident without his knowledge and consent, either by one of his employes or some other person.

Article 16—The indemnity to be allowed one or more victims of a motor car accident may never amount to more than 30,000 francs or $6,000. This, however, is independent from allowances that may be made for damage done from the material point of view. In case there are several victims and $6,000 is allowed then this sum will be divided by taking into consideration the seriousness of the case of each victim.

Article 18—Every owner of a motor car is obliged to insure his car for a sum of at least 30,000 francs. If an owner has several cars the minimum for each one must be 30,000 francs.

The Belgian motor car law project was prepared by a committee of members of the senate. Its chairman, in the explanatory report, shows his one-sidedness quite plainly. He speaks of the motor car in a general way as being a monster of 80 horsepower, which, when driven at express train speed on the streets or highways, scares people so they scatter in all directions; that children cling to their mother's breast; that the horses run away, and that the cars emit bad smells, awful dust, etc. As the chairman of the committee is a very influential politician, it may be difficult for the motor car crowd in the parliament to improve the law.

NEBRASKA BILL BEATEN

A bill which may have for its primary object the knocking out of the McKeen motor cars, was introduced in the Nebraska senate a few days ago making it unlawful to operate cars as passenger, baggage or express coaches unless the gasoline tank is apart from the car, or unless its capacity is 10 gallons or less. No sooner had the bill been promulgated in Omaha than its effect upon owners of high-powered cars was realized, and steps were immediately taken to knock it out. The bill, which was introduced by Senator Brown, failed of passage in the house. The McKeen motor cars, the invention of W. R. McKeen, Jr., president of the Omaha Automobile Club, are used on many branch lines in Nebraska and other states where there is light traffic. They resemble an ordinary passenger coach and are operated by gasoline. Their tanks hold from 80 to 100 gallons of gasoline, and it was through fear of an explosion that Senator Brown introduced his bill. Had it succeeded in getting by the house, it would have hit the high-powered pleasure car in a vital spot, as many of them carry more than 10 gallons of gas. In speaking of the bill, Mr. McKeen said: "The bill illustrates the prevalent fear of gasoline experienced by many people. It is popularly looked upon as a dangerous explosive, and yet is a very harmless, easily-handled fluid when its characteristics and nature are understood. There are only two features which cause trouble: One is the gasoline gas is heavier than air and is therefore certain to collect on the floor or lowest place possible and remain. The other is with a correct mixture of gasoline and air an explosive is formed; but the gasoline flame is in itself rather a weak flame, and a flame of 2 or 3 feet in length can be blown out with the expiration from a person's mouth. Any sort of gasoline flame is easily quenched by smothering, and a barrel of gasoline when ignited can be extinguished by simply placing a coat over the opening or in any way covering the barrel; as can also an immense gasoline flame be extinguished by the use of a blanket. Gasoline is no more dangerous than compressed Pintsch gas, acetylene gas, etc."

NEW CONNECTICUT BILLS

Numerous bills tending to amend the Connecticut state motor car law have been offered in the present legislature, some of which are worthy of notice. Griswold, of West Hartford, has presented by request a bill which provides that in actions for injury to the person or property of any one occasioned by a motor car, the plaintiff shall not be denied the right to recover damages because of his contributory negligence, but evidence of such negligence may be given in mitigation of damages. Agard, of Torrington, has presented a bill which would practically exempt motor cars from attachment. Chadwick, of Salem, has introduced a bill requiring motor vehicles to display the number or marker on front and sides in the night in black figures and vehicles to have white lights on front, red at the rear and blue on the sides, which shall display on the sides the number or marker in white figures. Riddick, of Woodstock, has a bill providing that the selectmen of any town may, whenever the safety of the general public so demand, cause to be placed warning signs in any highway approaching cross roads, corners, sharp curves, or other points of danger, elevations or depressions in the grade that shall compel the reduction of speed of vehicles, and no town shall be liable for any damage sustained by or accruing to any person by reason of passage over such elevation or depression.

MAINE HAS TROUBLES

The motorists of Maine, as represented by the Maine State Automobile Association, have a fight on their hands now that concerns Bar Harbor, the most famous summer resort along the Maine coast, and before it is over there will be some sharp skirmishing between the interested parties. Bar Harbor has in a measure excluded motor cars for some years, restricting them to certain streets and under an ordinance has prevented them from being driven to and from the island over the road connecting with the mainland. So to get a car there it had to be shipped by water. Before the judiciary committee of the Maine legislature there is now pending a measure to prohibit the use of motor cars not only in Bar Harbor, but Southwest Harbor and Tremont as well. Behind the petition are some of the wealthy summer residents. Arrayed against it are more wealthy summer people as well as hotel men, business men and citizens. Both sides have engaged lawyers and there is plenty of money ready to help either faction. This is the first time that the legislature has been asked to enact a law prohibiting motor cars in any section of Maine, and the association has taken a hand in the matter, fearing that the passage of the law will establish a bad precedent and be injurious to the state. Another bill introduced from Solon prohibits motor cars passing through that town except on 3 days in the week. Another prohibits them passing through Sullivan. If this passes it will be impossible to get into Sorrento. Among the summer residents of Bar Harbor who are in favor of giving the freedom of the island to the motor cars is George W. Vanderbilt who has written a strong letter stating that he believes their unrestricted passage to and from the island would be a public benefit. The advocates of the motor car do not ask for use of all the island highways, but they do want a highway to and from the mainland, now denied by vote at town meeting.

AGAINST JOY RIDING

Mention was made in a previous issue of Motor Age of the introduction into the Michigan legislature by Representative A. Ward Copley, of Detroit, of a bill making joy riding, as it is commonly known, a punishable offense. The full text of the bill has been delivered by the printer. As will be noted it aims to punish not only the driver, but also the other occupants of the car. The following is the full text of the measure:

Section 1—Every person who steals or uses without authority a motor car or other motor

vehicle, or any of the parts thereof, or contents thereof, regardless of value, while said vehicle is standing upon any public or private highway, or in any garage, barn, or other building or covering used for protection against inclement weather, or who shall be a party to said theft, or who shall receive, buy, borrow or participate in the concealment or use of a stolen motor car or other motor vehicle, its parts or contents, knowing that the same has been stolen, shall upon conviction thereof be punished by imprisonment in the state prison for not less than 1 year or more than 5 years, or by a fine of not less than $500 or more than $2,000, or by both said imprisonment and fine in the discretion of the court: Provided, That in cases of first offense the court may in its discretion reduce the punishment to imprisonment in the county jail for a term of not less than 6 months nor more than 1 year, or a fine of not less than $100 nor more than $500, or both said imprisonment and fine: Provided further, That the provisions of this act shall be construed to apply to any person or persons employed by the owner of said motor vehicle or any one else, who by nature of his employment shall have the charge of, or the authority to drive said motor car or other motor vehicle, if said motor car or other motor vehicle is driven or used without the owner's knowledge and consent.

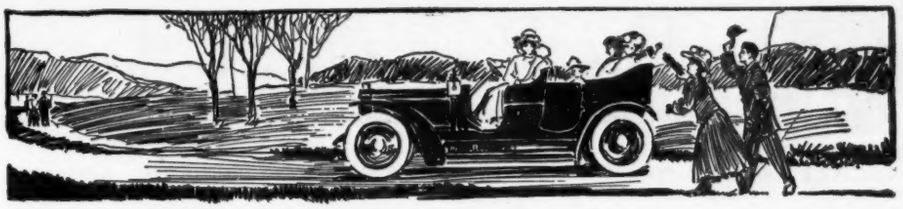
FIGHT FOR UNIVERSAL LIGHT

The committee on roads and bridges of the Massachusetts legislature has reported adversely on the petition presented by motorists that lights should be placed on vehicles using the highways at night. The result was not reached until after a warm fight, for four members dissented, and so strongly that the proposed measure is not dead. An effort will now be made to introduce the bill before the house instead of having the report of the committee accepted.

VERMONT HAS A TAX

Vermont has passed a new motor law which is now in effect, but as the season is not yet opened because of the snow, and roads not being in very good shape, the full import of it has not been felt. It is based upon a horsepower plan, but it is rather curiously worked out and should some motorist take it to the supreme court it might be found that some sections are unconstitutional.

Resident owners will have to pay according to one set of figures, while non-resident motorists are placed on a different scale, though on horsepower basis. According to the new acts the operator's fee is $2 and the registration fee for a new machine is $1 per horsepower the first year, 75 per cent of this amount the second year and 50 per cent the third year and thereafter, it being necessary to register annually. A transfer of a car may be made without the payment of an additional fee outside that of the operator. Non-residents will be required, by another act, to take out a license to operate their machines within the state, for which they will be taxed $3 for machines that have less than 20 horsepower, $6 up to 40 horsepower and $10 for 40 horsepower and over. The license will give them the right to run their machines in Vermont for a period of 60 days, and if they remain here longer they must pay the same amount as resident owners. To residents of other states, however, extending the same privilege to Vermont motorists motor cars will be exempt from the visitors' registration regulation for a period of 10 days. It is believed that the law will return a revenue to the state of $40,000 annually, which will be expended under the direction of the state highway commissioner in the counties where raised.



MINNESOTA BILL SAFE

After weeks of hard work and anxiety the leading motor enthusiasts of the state are now feeling easier about the fate of the new bill which finally has the unqualified endorsement of all of the nineteen clubs affiliated with the state organization. The bill provides for a tax of $1 per horsepower, this to be in lieu of all personal taxes on the machines and besides several other desirable features it directs that all funds accruing from this taxation shall be used by the state highway commission in the good roads work of the entire state. This means that in addition to the good roads funds now used that there will be between $150,000 and $200,000 in addition each year, for these improvements. The bill was introduced in both senate and house and was referred to the committee on legislation. Just at this point in the proceedings two clubs in the state organization, which, it developed later had given the matter hasty consideration, communicated with the senate committee speaking against the bill, with the result that the committee decided to postpone action indefinitely until the bodies of the state association were unanimous in their support of the measure. Some quick and effective work was done at once with the result that the objections of these two clubs were removed and there is now every chance in the world that the matter will be reported favorably out of committee and action secured soon. This bill, in the general opinion, will do more for motoring and the good roads cause than any other measure ever thought of or proposed in the state of Minnesota, and motorists all over the state are naturally jubilant at the prospects.

MARYLAND AMENDMENTS

A number of additional details for the motor car bill prepared by Colonel Sherlock Swann, for the Maryland state motor car commission, and which will be presented to the next Maryland general assembly, have been made public by the author. Two commissioners are provided to execute the law, one to get $3,000 a year and the other $2,400 a year, both to be appointed by the governor. It also provides for the display of a license certificate, against the operation of a machine by an unlicensed person, for permission to non-residents to use the state highways, for regulation of speed to 12 miles an hour in cities, 18 in outlying suburbs and 25 miles an hour in the open country. The bill provides against the operation of a machine by an intoxicated person, against any toll roads charging more for a motor car than a two-horse team, for brakes and signals, for fines to be imposed by justices of the peace, against a chauffeur accepting a bonus or fee from a repair shop; that all receipts of the commissioners' office not needed for salaries and expenses be turned over to the good roads commission. The fees decided upon for the motor cars are: $3 a year for every motor vehicle used for carrying merchandise; $6 a year for cars of 10 horsepower or less; $12 a year for every machine between 10 and 20 horsepower; $18 for every car between 20 and 30 horsepower; $24 for every motor car over 30 horsepower; $3 for motor cycles.

BADGERS DISCUSS LAWS

Several bills relating to the motor car are now before the Wisconsin legislature or in committee, and they represent a great variety of views and radicalism. The chances are that not one-twentieth of the bills will ever come to a vote. The main reason for the many bills is the desire of some of the backwoods "statesmen" to satisfy their constituencies by presenting bills. One of the radical bills is by Assemblyman Bichler, representing a rural district of Ozaukee county—as the name indicates—who would tax every owner of a car under 5 horsepower $5; over 5 and up to 10, $10; exceeding 10 horsepower $10 for the first 10 and 50 cents for each additional. Bichler plans to raise $100,000 by this method to further the work of good roads. Car owners agree that the roads should be improved, but they do not see why they should stand the entire expense, when the roads are being used just as hard and perhaps harder by the farmers with horse and wagon. Another bill would bar all persons under 17 years of age from driving cars; another would give the common councils authority in their own discretion of taxing all kinds of vehicles; another even disregards the motorists and would tax all owners of horse-drawn trucks and heavy wagons because they injure pavements.

FAVORS HORSEPOWER TAX

The Safe Roads Association of Boston has joined the ranks of those in favor of the proposition to tax motor cars according to horsepower. It has sent out a circular letter to its members asking for opinions on the subject so that a statement may be made when the hearing on the project comes up.

The Readers' Clearing House

MAGNETO ON WINTON

CUMBERLAND, WIS.—Editor Motor Age—Will Motor Age state whether it is advisable to use a magneto on a Winton model K? The present ignition is furnished by storage batteries and dry cells.—Reader.

It would be perfectly satisfactory to fit a magneto on your model K Winton, and a bed plate is provided on the crankcase where the commutator is at present placed. Probably it would be more satisfactory to communicate with the Winton factory, as undoubtedly the company has fitted magnetos to some of its model K's and has discovered the easiest and most satisfactory way of doing same.

QUESTION OF POWER

Putnam, Conn.—Editor Motor Age—Through the Readers' Clearing House will Motor Age inform me which motor will develop the greater horsepower and how much: One engine having the valve-in-the-head construction and the other with both intake and exhaust valves located on the side? With the exception of the valve construction, the engines are practically the same, both having four cylinders, with 4½-inch bore and 5-inch stroke, and jump spark ignition.—Inter-State.

Granted that all parts of the engines, one with the valve-in-the-head type, the other with the intake and exhaust valves on opposite or the same sides, are alike, and from a standpoint of design the motors are on a par with the exception of valve location, then that with the valve in the head would show good power efficiency, ranging from 15 to 20 per cent. It often happens, however, that a T-head motor gives more power than a valve-in-the-head, due to improper designing of the valve-in-the-head type; but, where both are of equally acceptable design the valve-in-the-head type has on many tests shown considerably higher efficiency.

MARINE POWER RATING

Winnipeg, Manitoba—Editor Motor Age—I have an 18-horsepower two-cylinder opposed four-cycle motor car engine with cylinder sizes 4¾ by 4½. Will Motor Age tell me what rating this engine would give in a marine engine of the same dimensions? It is my understanding that it will run much slower in a launch and develop less horsepower. Should it have a heavier or lighter flywheel when installed in a launch?—Subscriber.

A four-cycle motor when specially designed for marine work does not have a crankshaft speed of more than 600 revolutions per minute, whereas were a motor of the same size designed for motor car use it would have a possible speed of 1,500 or 1,800 revolutions per minute. To insure uniform torque the flywheel is made anywhere from 25 to 50 per cent heavier, the exact amount of additional weight depending on the construction of the motor. The horsepower developed in the launch when running at greatly reduced speed is almost proportionately less according to speed reduction. The conditions under which a motor in a car and in a boat operate are so different that comparisons are difficult. The boat runs through a uniform liquid whereas the car travels over all kinds of road surfaces and on hills and other kinds of roads.

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems and invites a discussion of pertinent subjects. Correspondence is solicited from subscribers and others.

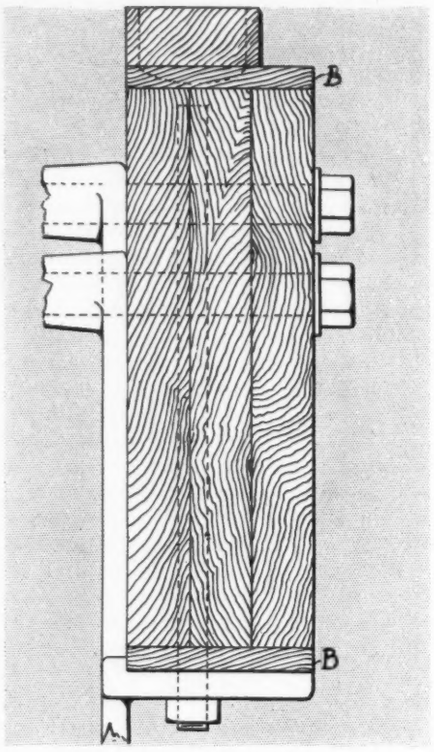


FIG. 1—FRANKLIN FRAME

PACKARD HORSEPOWER

Youngstown, O.—Editor Motor Age—In Motor Age February 4, page 76, is a statement that the Packard 18 figures 36.1 horsepower, and on page 77, in response to an inquiry as to whether there is any other American rating than the A. L. A. M., it is stated there is not. Will Motor Age kindly advise me the method by which it figures the Packard 18 at 36.1, as it has 4 1/16-inch cylinder bore which I figure at 26.4 horsepower. Is not this correct, and would it not take 4¾-inch cylinders to figure 36.1? Also state why the specifications of cars exhibited at the shows, as published in Motor Age, do not give the weight, as this is one of the first things a car buyer wants to know.—Reader.

The rating of the Packard 18 should be 26.4 horsepower, as it has a cylinder bore of 4 1/16 inches. The reason for omitting the weight of cars in the specification table is that the facts have proven the weights given out by the factories are frequently much less than that of the actually equipped car, which is a factor with which the buyer has to deal.

HINT ON CLEANING BRASS

Madison, Wis.—Editor Motor Age—After cleaning and polishing the lamps and other brass on my car, I found that to apply a thin coating of Three-in-One oil would help materially to preserve the luster. As cleaning brass is no easy task, I thought this hint might prove of interest to your readers.—H. H. Frudenfeld.

THE FRANKLIN FRAME

Syracuse, N. Y.—Editor Motor Age—On page 55 of Motor Age, February 4, is shown a sectional drawing of the side member of the Franklin chassis frame, representing it to be made of a solid piece of wood. The Franklin wood frame is a laminated construction, Fig. 1, consisting of selected second-growth white ash in three vertical laminations. In construction these strips, or laminations, are screwed and glued together, and although previously air-seasoned and kiln-dried in the plank, they are again dried at a slightly lower temperature. Each edge is bound with a thinner strip B and painting and varnishing are done to prevent the entrance of moisture. Laboratory tests show that a wood frame so constructed is not only lighter but stronger than the commonly used steel frame, and is as well more effective in the absorption of road shock. The resiliency of the wood is such that the effect of road inequalities is minimized. Holding one end of a steel bar while a heavy blow is directed at the other makes one realize how steel transmits vibration. The same experiment with a wooden bar shows how vibration is absorbed by wood. Government tests have demonstrated the strength of the wood, and these tests have been duplicated at the factory. A strip of the second-growth white ash 30 inches long, 4 inches deep and 2 inches wide, weighing a little over 6 pounds, is found to break at a little less than 15,000 pounds. This being a solid piece, its strength is less than that of the Franklin laminated construction. The latter insures a uniformity of strength, and the difference of direction in the grain of the strips produces a resisting power that would be lacking in a solid piece of uniform grain. Defects in the wood that might be concealed in a solid piece are exposed in the process of lamination and

are eliminated, so that there are no weak spots in the Franklin frame construction. —J. E. Walker.

AUTOGENOUS WELDING

Chrisman, Ill.—Editor Motor Age—I have read with particular interest the illustrated description on autogenous welding, which appeared in Motor Age, issue December 3, pages 42 and 43. I have experimented somewhat with this process, and understand how to make both oxygen and acetylene, but have experienced trouble with the burners which I have constructed. I am quite sure that an illustrated description of a suitable one would be greatly appreciated by all Motor Age readers.—J. W. Manghmer.

Considerable information on burners for autogenous welding was given on pages 80 and 81, Motor Age, February 4, in which a burner illustration was included.

INFORMATION DESIRED

Deming, N. M.—Editor Motor Age—Will Motor Age give me the name and address of a concern manufacturing a double-opposed air-cooled motor of from 4 to 5 horsepower.—G. A. R.

Motor Age is not aware of any concern manufacturing a motor of the type and power you mention, although there are several concerns making motors of this type with 4 by 4-inch cylinders, giving a horsepower rating of from 10 to 12. Information from any readers of Motor Age as to concerns manufacturing this type of motor will be appreciated and forwarded to inquirer.

PLANETARY VS FRICTION TYPES

Ghent, N. Y.—Editor Motor Age—Referring to D. O. Babcock's remarks in Motor Age, February 4, page 77, as to where the advantage lies in friction transmission over that of the planetary type, I fully agree with him that the efficiency of planetary system when running on high is greater than the friction drive, as there is no loss through slipping and the driving sprocket on the planetary ought to show an efficiency of nearly 100 per cent. The driving sprocket on the jackshaft of the friction drive shown by Babcock would show an efficiency of 92 per cent, not allowing for the slipping caused by thrust bearing, which would scarcely be noticeable if properly constructed. But the great advantage of friction transmission over the planetary, and all other types in which gears are involved, is that the efficiency always remains the same—whether you are running on high, low, or intermediate speeds, that same 92 per cent of power is delivered at all speeds. There are no pinions to strip or wear out in friction drive when running on low. The wear on tires is less, as the hydro-carbon motor applies its power in a succession of jerks except in the six-cylinder motors where it is applied more even. These jerks are absorbed by the slight slipping of the friction disks and therefore relieve the tires of considerable strain. The planetary transmission transmits these jerks to the tires, causing considerable wear. It is my opinion that friction transmission is the proper method of transmitting power to both pleasure and commercial vehicles, the lives of which are considerably lengthened, owing to its shock-absorbing effect.—H. M. Raab.

FACTS ABOUT GREASES

New York—Editor Motor Age—We note on page L1, advertising department, Motor Age issue February 4, certain facts under the head "Superior Lubrication Saves Cost of Maintainance," and we wish to register objections to certain portions of this article, which are inaccurate and have, no doubt, been written from incorrect data. The two paragraphs in question are:

"Heat and light in the presence of atmosphere seem to be all that are necessary to render the average animal fat acid in its reaction within a short while after it is compounded."

"Pure mineral lubricants seem to be the right products in motor car work and fortunately there are producers of honesty and skill catering to the motor car trade."

We were the first in the field to manufacture a first-class, reliable motor car lubricant which is an animal grease; its purity and efficiency are absolutely guaranteed under our trade-mark; and it has been adopted universally for use on all kinds of machinery during the past 40 years, which speaks for itself. We have reams of letters from manufacturers of cars, chemists and manufacturers of all classes of machinery, which confirm our statements, and in strong terms mention the purity of our product, which is brought fourth in our booklets.

We have samples of Albany grease that were made 25 years ago; they are as sweet and pure as the product made today. There is absolutely no oxidation or deterioration, due to age or exposure, in them; in fact, it improves under the conditions of age in its lasting qualities.

The following extract taken from a letter addressed to us by H. Schroeder, chief engineer of the Consumers Co., Chicago, will indicate what a pure animal grease is like under test of a chemist, and what was proven and shown to be in competitive greases that were specified as "pure mineral greases:"

"I took a sample of three other makes of grease and a sample of your Albany grease to our chemist to make a chemical and acid test, and I was surprised to see what acid the other greases contained."

We also quote an abstract from a letter we received from the Ball & Wood Co., manufacturer of high-class steam engines: "It is with pleasure that we add our testimony to the merits of Albany grease, which we have used on our engines for 8 or 10 years with satisfactory results. Our confidence in its excellence warrants in our sending out sample cans with each engine shipment." We furthermore state that we can supply names of large manufacturers who have been constant users of Albany grease for over 35 years.—Adam Cook's Sons.

WIRING A NO. 10 BUICK

Walnut, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age tell how to wire a No. 10 Buick with four coils and a timer? Is the timing of the motor done on the center mark, or where? Why is it that some cars will catch the spark every time, and is it possible to turn my car so that it will start on compression each time, providing it has not stood too long?—Reader.

In Fig. 2 is given the method of wiring, as requested, the coil terminals and plugs being numbered so that any directions as to the method of wiring are unnecessary.

On the flywheel is a line marked "Center," and 1½ inch from this is another line marked "Exhaust Closes," and approximately ⅜ inch from this is a third mark designated "Intake Opens." To time the exhaust valves, bring the flywheel so that the "center" mark is up, then rotating it until the "exhaust closes" mark reaches the point. This

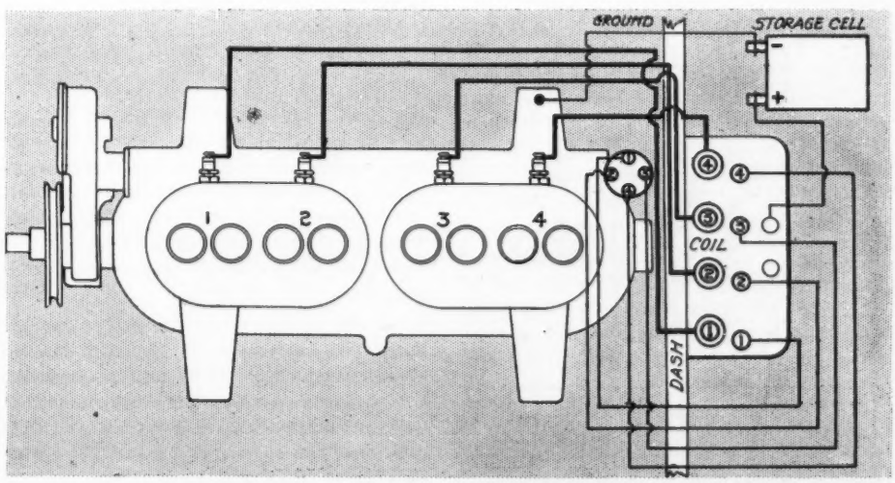


FIG. 2—WIRING DIAGRAM OF A NO. 10 BUICK MOTOR

would give the timing for the exhaust valve for say No. 1 cylinder. Bringing the flywheel a complete revolution to this mark would give the timing for No. 3 cylinder, and two successive revolutions would give the timing for cylinders 4 and 2. This would finish the timing of the exhaust valves. The timing on the intakes is identical, excepting that the flywheel is stopped on each revolution at the point marked "intake opens." A car will start on the spark provided there is sufficient mixture within the cylinders and the piston in one of the cylinders is past the top center so that rocking the commutator will produce a spark in the cylinder under compression. Starting in this manner can be done on any four-cylinder motor, providing the conditions are as mentioned.

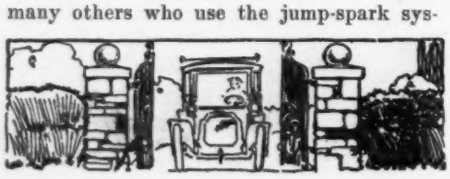
ELECTRIC MOTOR CYCLES

Ames, Neb.—Editor Motor Age—Will Motor Age give me the names and addresses of concerns making electric motor cycles. Where can I obtain a good, light, three-or four-wheeled railroad velocipede, or an attachment for a bicycle to use on railroad tracks? Is there a concern in this country manufacturing an electric railroad motor car, and if so will Motor Age furnish me with the address of such? If there is not such a concern in this country, does Motor Age know where I can obtain a 2-horsepower electric motor to use on a three-wheeled velocipede car or on a bicycle for use on railroads?—Chris Johnson.

Motor Age cannot give the names and addresses of concerns manufacturing electric motor cycles or tricycles, or of makers of electric railroad cars. An electric motor of the power you suggest could be secured from any of the big electric houses.

SUGGESTIONS FOR MANUFACTURER

Peoria, Ill.—Editor Motor Age—That manufacturers are making very little effort to simplify the mechanism of the 1909 cars can be seen at a glance, but most of them are adding to, instead of taking away parts that are not really needed, and instead of making a car that any one can drive, one must now be an expert to get along with one of the latest high-powered cars. Of course I do not mean to say that the manufacturers have not made any progress in making them better and more reliable, but I do mean to say that there is a lot of room to make cars more simple so any one can run one of them, which they cannot do today. Another thing is that they put too much paraphernalia on the cars. In the first place the two sets of ignition are not necessary. Why manufacturers hang on to the jump-spark system is a mystery to me, and a good many others who use the jump-spark sys-



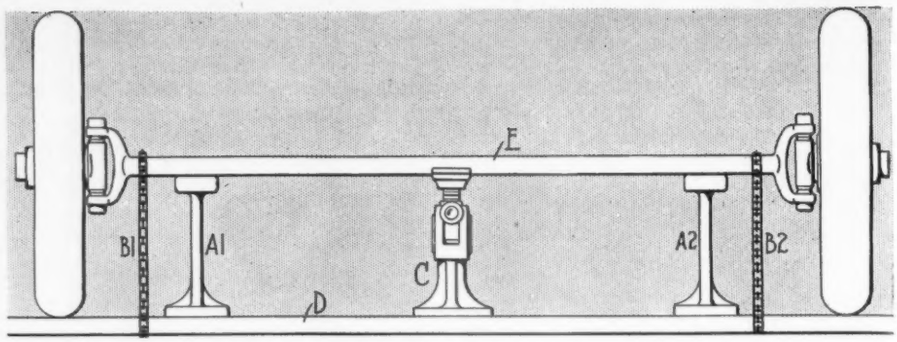


FIG. 3—PERCIVAL'S METHOD OF STRAIGHTENING A BENT AXLE

tem and the make-and-break. There is about as much difference between the two systems as there is between daylight and darkness; only when one has used the two systems does he find out the great difference in power. The make-and-break system causes very little trouble, requires very little insulation, and the igniters do not become short-circuited with soot as the jump-spark does. Another good thing about it is that the compression does not affect any kind of charge, and connected with a low-tension magneto it does not need a battery to start the engine when it is cranked. If the manufacturers would use the make-and-break system, this is what they could discard: Timer, four coils, a set of batteries, sufficient wire to go around the car twice, four troublesome plugs, and a switch. The make-and-break system requires one wire from the magneto to all four igniters, a magneto to make a low-tension current, and a switch to short-circuit the magneto to stop the engine. This system, which does not require the attention the jump-spark system does, is used on all stationary engines with the best results, and it is fitted to a few cars with excellent results. Also it is more easily understood than the other system. The make-and-break system, as applied to the motor in the Premier car is about the ideal of an ignition system. Next the manufacturers should try to get rid of the levers on the side of the car; it not only makes entering that side of the car impossible, but it makes the car look too much like some farm machine; the emergency brake could be operated much quicker with the foot than it can with the hand; besides, when a man has to use the emergency brake, he needs his hands on the steering wheel. Motors should be made more powerful, but the ratios should not be as high as they are. This would permit of the car taking most of the hills and the sand on high gear. Of course, the car could not travel over 35 or 40 miles an hour, but any sane man would not drive a car over this speed. One of the greatest faults in motor car construction is gearing them too high, and then building a transmission with half a dozen different speeds to it. Another wrong idea is putting the transmission on the back axle. This puts a heavy weight directly on the tires, resulting in the pneumatics wearing out quicker through having to take all the vibration. The transmission should be of the planetary type with a powerful engine built as one unit, geared low so as to take the hills on high gear, and it would also be able to pull the car along very slowly on high gear, making it unnecessary to use a number of speed gears. I noticed a car using a six-cylinder motor with a four-speed forward transmission; whereas, it ought to have only two with a six-cylinder motor. An ideal motor car would be one with a four-cylinder motor, make-and-break ignition, planetary transmission built right in the motor, and geared so it could not go over 40 miles an hour, which would give plenty of power for the hills and sand and would not require an expert to run it.—L. G. Stepzinski.

ADVICE ON CARBURETERS

Stillwater, Okla.—Editor Motor Age—Will Motor Age kindly state whether the Kingston carbureter, horizontal 1907 type, size 1 inch, can be used on an opposed engine 5⅛ by 4½? Is this carbureter large enough for this size of engine? I can adjust it so the engine will run all right at low speeds, but when I open the throttle it will miss and explode in the muffler; then I can adjust it to this throttle and then it won't run at low speed. I have tried everything I can think of but failed. I would like your advice on the matter.—H. E. R.

A 1¼-inch size would be better for this size of engine, in fact, is the size suggested by Byrne, Kingston & Co. This concern is not manufacturing the type of which you speak at the present time. The best advice is to adjust for slow speeds by closing the throttle almost shut and then adjusting the needle valve until the motor will just turn over without missing.

SELF-STARTING DEVICE

Neillsville, Wis.—Editor Motor Age—Will Motor Age kindly state what it thinks of a motor-starting device using a heavy spiral spring to store power and to start motor. I am aware that such device has been patented. Have any been successful?—P. N. N.

One or two self-starters of the nature you suggest have been on the market, but

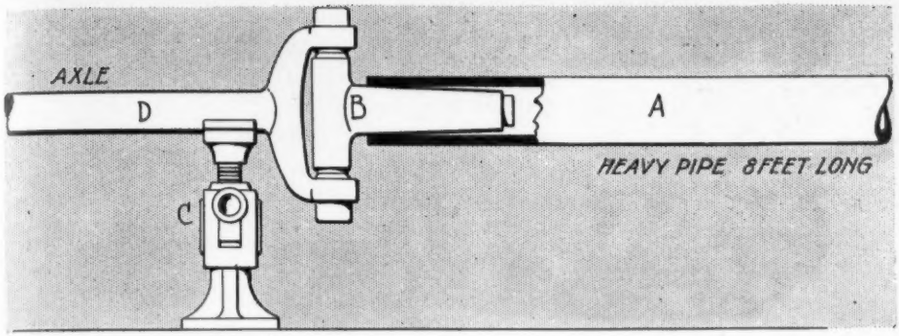


FIG. 4—HOW PERCIVAL STRAIGHTENS BENT STEERING KNUCKLES

at present it is impossible to give the address and name of the makers. Many of the self-starters that have been on the market have not proven successful for various reasons, among others which might be noted, the cost of fitting to the car, the intricacy and their uncertainty. There is undoubtedly a big field for self-starters and they must come sooner or later. With a self-starter and demountable rim it will be possible for a lady to drive a motor car without any danger of becoming stalled on the road, either because of a puncture or not being able to start the motor.

STRAIGHTENING AXLES

St. Louis, Mo.—Editor Motor Age—I have been a subscriber to Motor Age for over a year, and I have gathered a great deal of information from your pages. I am enclosing a couple of sketches and information on bent front axles and steering knuckles which may be of value to both the repair man and owner who desires to make his own repairs. It frequently happens that a car skids into a curb and generally the result is a bent axle or spindle. Either of these can be straightened without the use of heat or removing them from the car. To straighten bent front axles, we first secure a good, heavy plank, say, 2 inches by 12 inches, and about 8 feet long; two pieces of heavy chain, each about 5 feet long with a hook on one end so that the end can be fastened, and two ordinary motor jacks. Lay the chains B-1 and B-2, Fig. 3, on the floor parallel with the car so they can be looped over the axle just inside of the steering knuckles. We now lay our plank D on the chains, and directly in front of the front wheels. Run the car on the plank and block the rear wheels—do not rely on the brakes. Chains B1 and B2 are now looped over the axle, as shown in the drawing, and fastened. To take the slack out of the chains, and also to keep the strain off the knuckles, place the two small jacks A1 and A2, as in drawing, just inside of the chains and adjust until the chains are tight. Taking the screw jack C, we put it directly under the axle where it is bent the most. We are now ready to screw up on our jack C slowly until our axle is straight or the wheels pitched enough to suit our desire. As soon as we are satisfied, we take a light hammer and beat gently on axle E as close to screw jack C as possible. Then we remove all jacks, and examine the axle again. If the axle is not straight, we replace the jacks and apply more strain on the screw jack C, as some axles have more spring in them than others.

To straighten bent steering knuckles, get a length of iron pipe, say about 8 feet long, and large enough in diameter to slide over the spindle, as shown in Fig. 4. Jack the axle up and take the wheel off, removing the cones if there should be any, and slide the pipe on the spindle as far as the bend. In some cases it is desirable to cover the threads on the spindle with a brass bushing, so as not to mar them with the pipe. We are now ready to pull up on the pipe and by striking the pipe directly above the spindle with a heavy hammer, we will find the spindle straightens easily. Put on the wheel and remove jack. The car is now ready, thus saving the time of removing the knuckle and heating it. The writer has performed these two stunts for the past 2½ years with the best kind of results, never breaking a knuckle or injuring it. I also have many others, which, if they will be of any value to the readers of Motor Age, I will be only too pleased to submit.—George J. Percival.

A PHASE OF TIRE MAKING

Chicago Ill.—Editor Motor Age—The making of tires is one of the most interesting phases of the motor car industry. The advances made in this particular branch of what has come to be one of the greatest factors in American industrial life in truth are amazing.

Motor car tires are made in three ways, or rather, two distinct ways and a combination of the two. These two ways are moulded and wrapped tread, and all tires may be divided between these classes with one exception, which combines what are said to be the best points of both.

The moulded tire is built up layer by layer on an iron core. Over it is clamped an iron mould. It then goes to the vulcanizers. Here heat expands the rubber, creating enormous pressure inside the mould, which forces a perfect union between the layers of rubber and fabric which go to make up a tire. This pressure is so tremendous that a 2-inch cube of rubber enclosed in a cast-iron mould with walls 2 inches thick will crack the iron when subjected to the heat of the vulcanizer.

The weakness of the process lies in the fact that the building up of the fabric and rubber piece by piece is an operation requiring skill and dexterity. If the strips of fabric overlap ever so little—there's a ridge. If they fail to meet by the fraction of an inch—there's a hollow. These ridges, hollows, irregularities are said in the curing to become hidden weaknesses and defects, because of which one moulded tire will last only 1,600 to 2,000 miles, while its mate stands up perfectly for 12,000 to 15,000 miles of hard riding.

The wrapped tread tire is built up layer by layer on an iron core in the same manner. But before curing the iron core is replaced by an air bag—an extra strong inner tube. And instead of being clamped in a mould it is wrapped about with many layers of strong tape and then cured—vulcanized—in live steam.

The compressed air in the air bag smooths out all the irregularities in the layers, as your hand smooths out wrinkles in a garment—there can be no hidden ridges or hollows to induce blowouts and cut down the mileage.

But it does not give the terrific squeeze that the moulded tire gets—thus lacks cohesiveness and unity—loses durability and strength.

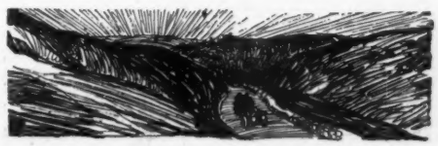
Besides these two methods of tire making, there is also the combination of the two employed by the Goodyear people. The tire is first put on the iron core, clamped in the iron mould, the same as the moulded tire, and enclosed in hydraulic press vulcanizers, surrounded by live steam until the rubber has expanded to the utmost—until the squeezing has reached its limit.

Then before the rubber has fully set—while it is still plastic—it is removed from the vulcanizer and carefully inspected, the tread applied, the iron core is replaced by the air bag, the iron mould by the winding of heavy tape, it is inflated on a rim, put back into a vulcanizer and left until the curing process is complete.

The iron core and the squeeze weld the tire into an inseparable whole.

The air bag then smooths out any wrinkles, furrows or irregularities which may have been hidden from the inspector's eye.

The result is said to be that the tire is as firmly knit together in all its parts as the best moulded tire and as free from hidden defects as the best wrapped tread tire.—L. T.



"Spirit of Motoring," Decorative Group in Detroit Show, That Will Be Used for Reliability Prize

Engine Demonstration—Without a stop and without an adjustment a Franklin engine of 28 horsepower was run for 60 hours at the recent motor car show at Oklahoma City. This non-stop run was made at the Franklin exhibit.

Rid of Toll Gates—The toll gate evil was finally and forever lifted from the Haddonfield, N. J., turnpike at noon on Saturday last, when the final payment of $12,000 was made into the New Jersey court of chancery. When contemplated improvements have been completed this will add another to the radii of good roads leading out of Camden, and will prove of much advantage to Philadelphia motorists.

Leaves It to Public Opinion—The Norristown, Pa., club has stacked up against such a variety of opinions as to the best route for the 2-day endurance run it proposes to pull off next May that it has adopted a novel scheme in order to arrive at a decision. At a smoker in its new clubhouse this evening, to which all the prominent owners and tradesmen in Norristown, Philadelphia, Lancaster, Reading and other near-by cities have been invited, all the members and guests will be invited to express their opinions in the matter, and the route which seems to meet the views of the majority will be selected.

Quaker Committees—President L. D. Berger, of the Quaker City Motor Club, made the following announcement of committee appointments at the meeting of the baord of governors last week: Law and ordinance, G. Douglass Bartlett, C. Edgar Shreve; good roads, R. E. Ross, Frank Hardart, William T. Taylor; routes and tours, Edwin H. Lewis, Richard Sellers, A. E. Maltby, A. C. Bugby; house, Frank Hardart, A. T. James, Fred C. Dunlap, N. E. Petty, George G. Meade; membership, A. T. James, A. T. Stewart; auditing, Fred C. Dunlap, W. C. Jackson, Dr. W. J. Donnelly. Charles J. Swain was appointed chairman of the technical committee and Dr. W. J. Donnelly of the press committee, the remainder of these committees to be announced hereafter. Dr. J. R. Overpeck was reappointed as club pathfinder and G. Hilton Gantert official starter.

Shanghai a Good Market—The demand for motor cars is increasing every year at Shanghai. Imports are principally in American and British cars of from 8 to 10 horsepower, of the closed family type and of the light runabout pattern. There is also a good trade in parts and accessories.

Plans Club Runs—The Wilkinsburg Auto Club, of Wilkinsburg, Pa., is arranging to have several runs next summer. One of them will be to Clarion, Pa., where the club will be entertained by Professor R. G. Yingling and another will be to Canton, O., where Dr. W. C. Cook, of Wilkinsburg, will make a balloon ascension.

Home for Two-Wheelers—The Indiana Motor Cycle Club, organized about 1 year ago in Indianapolis, has just been incorporated and will build a clubhouse. The officers are: Charles Wyatt, president; H. L. Dipple, vice-president; Robert H. Sturm, secretary, and Harry Graff, treasurer. Directors, in addition to the officers, are G. H. Hamilton, of the G & J Tire Co., and F. I. Willis, of the Hearsey-Willis Co.

"Spirit of Motoring"—Those in attendance at the Detroit show greatly admired the "Spirit of Motoring" used in the decorative scheme, which was designed by Frederic Wagner. Because of the public's commendation it has been decided to reproduce the group in miniature in the form of a gold trophy to be presented to the Detroit Automobile Dealers' Association for its big reliability run. The group consists of two figures—the man at the wheel, the lower portion of his body being submerged in a cloud of dust and the features full of force and emotion, while beside him, her hand resting on his shoulder, is the figure of Victory—an orthodox Victory with calm features and unemotional gaze, contrasting splendidly with the strong set face of the man who is not driving the car, but directing an industry.

Bangor Show Postponed—The proposed motor show at Bangor, Me., which was scheduled for this week has been postponed until April. It seems that J. Henry Graham, a Bostonian, went there and proposed to hold the show and then sought out the local dealers to sell them space. The dealers did not enthuse much over the plan, however, although they would not mind having a show, but some of them preferred to look after it with local talent and choose their own date.

Bay State Registration—The Massachusetts highway commission has been busy registering motor cars the past few weeks, and the clerical force had to work nights to keep up with the rush. During the month of January there were some 6,000 motor cars registered. The rush is now over for a while, but it will start up again late in the month and during spring there will be a big rush on. It is estimated that there will be close to 20,000 machines registered in the Bay State during the present year.

Object to Bigger Fees—There will be considerable opposition to the bill now before the Wisconsin legislature providing for an increase and for changes in the registration laws as regards fees. The argument for the bill is that the registration is a losing proposition to the state. Investigation shows that there are 6,250 licenses issued in Wisconsin. This gives the state a revenue of $6,250 under the present fee of $1 per license. Transfers are made for 50 cents. It is believed in some quarters that $6,250 is enough to operate this sub-department of the department of state, and it is pointed out that before 1909 is over, no fewer than 8,000 licenses will have been issued. The Mil-

waukee A. C. and Wisconsin State A. A. will have their say before the legislators before the bill is finally disposed of. A reasonable advance in the fees will not be opposed.

Join the Federation—The Automobile Club of DuBois, Pa., J. H. Fulford, secretary, and the Beaver Valley Motor Club, Beaver Falls, Pa., J. A. Snyder, secretary, have both been admitted to the Pennsylvania Motor Federation within the past month.

Cannot Close Public Road—Judge R. S. Frazer rendered a decision in common pleas court in Pittsburg last week to the effect that a borough or township has no authority to close a public highway once opened. The case came up in connection with the refusal of Sewickley township authorities to allow motorists to run their cars along the Little Sewickley creek road from Centennial avenue to the Sewickley township line.

Lansdale Club Election—The Lansdale Automobile Club, of Lansdale, Pa., has elected the following officers to serve during the ensuing twelvemonth: Dr. J. W. Baumann, Lansdale, president; H. S. Louder, Louderton, vice-president; T. R. Bright, Lansdale, secretary, and Henry B. Freed, Louderton, treasurer. The club's membership is drawn from points along the North Pennsylvania railroad from Ambler to Quakertown.

Decries Road Racing—Much opposition is developing about the proposed speed race between the Cadillac and Jackson from Pittsburg to Philadelphia on March 3, and the Pittsburg Automobile Club is making an effort to have the agents give up the present plans and enter the contest of the Pittsburg Gazette-Times and the Pittsburg Chronicle-Telegraph. The club also is fighting the project because it believes the speed race will jeopardize the present bright chances for the passage of a uniform speed law in Pennsylvania and its secretary, Paul C. Wolff, says that every means possible is being used to induce the Jackson and Cadillac people to change the speed run into an endurance test.

Tradesmen Plan Tour—The success achieved by the New York Automobile Trade Association in its New York to Montauk Point and return run of last fall has been in a measure the stimulating influence behind its desire to conduct a similar event in the early summer. President Eveland has, therefore, announced a 2-day mountain tour and reliability contest to take place about June 11 and 12, and has appointed Charles P. Skinner, of the Mitchell Motor Co., chairman of a committee to formulate rules, regulations and plan the itinerary. Present indications are that the itinerary will embrace the roads leading from New York along the west shore of the Hudson river up into the Catskill mountains, where the night control will be at Catskill. Leaving in the early morning the second day the contestants will proceed across the Hudson river and travel cross-country to the picturesque Berkshires, through which the return trip to New York will be made.

Asked to Dim Lights—While there is no law in the District of Columbia compelling owners of motor cars to diminish their acetylene lights while on the city streets, the district commissioners have issued a request that all owners of cars refrain from using such lights during inaugural week. At such a time as March 4, when the city is crowded with visitors, the use of such lights on cars is little short of a nuisance, and it is likely that every motorist will heed the request.

Fort George Climb Scheduled—The New York Automobile Trade Association will be prominent in the season's promotions, as is evidenced by an announcement from Secretary Lee. Prominent among the events scheduled is the second semi-annual climb up the Fort George hill, which is to take place Saturday, April 10. The same rules that were in force for the postponed climb of last fall will be effective for this event, and from present indications it looks as if the classifications will be by price and horsepower.

Century Club Actions—Nothing now remains to complete the transition of the Century Wheelmen of Philadelphia into the Century Automobile Club but the perfunctory permission from the common pleas court to allow the change of name in the club's charter. This will be attended to in time to permit of final action at the March meeting. The new by-laws were presented at last Friday night's meeting, and will be acted on finally at the same meeting. Among the amendments are one calling for the appointment by the board of directors of a committee on contests, exhibitions and tours to look after all events arranged by the club or in which it may participate; of a motor racing secretary, who shall be ex-officio a member of the committee on contests, exhibitions and tours, whose duty it will be to keep accurate tabs of all such events and attend to all the necessary correspondence; of a technical committee, whose duty it shall be to examine all cars before the start and at the finish of any road contest and pass judgment on their condition according to rules to be published in advance of any such contest, and of a committee on roads to keep a watchful eye on badly-paved streets and roads and recommend to the directors proper action as to the locating, constructing, repairing and maintenance of improved highways. A very important paragraph in the new by-laws is the following: "No one who is in any way connected with the motor car trade, either as manufacturer, agent, dealer, demonstrator or professional driver, shall be eligible to membership on the committee on contests, exhibitions and tours, and in the event of any member of said committee entering his car in any contest, exhibition or tour he shall temporarily cease to be a member of said committee and have no voice or vote in the deciding of that particular contest."

Warned About Numbers—Buffalo motorists have just been requested by Superintendent of Police Regan to display their numbers in a more conspicuous place on the rear of their machines than some of them are now placed.

Another Franklin Record—C. W. Talbot and A. F. Rees in a Franklin have made a new record from San Antonio to Beeville, Tex. With two comrades they left at 9 o'clock in the morning and covered the distance, 110 miles, over bad roads, in 5½ hours. The best previous time for this trip was 8 hours.

Going to Inaugural—It is expected that many motorists will be in Washington for the inauguration of Taft and Sherman on March 4. Garage men are receiving many requests for storage room, particularly from New York and Philadelphia motorists. The Automobile Club of Washington will have open house during inaugural week. The clubhouse will be elaborately decorated for the occasion.

New Albany's Platform—The New Albany Automobile Club of New Albany, Ind., with a membership of forty-two, is in a healthy condition, with increasing interest among the individual members and new ones being added constantly. The club stands for good streets, good roads, fair and equitable legislation, the proper application of the laws, and a cultivation of a better feeling between the motorists and the general public.

Wilkes-Barre Chooses Officers—The following have been nominated to look after the destinies of the Wilkes-Barre Automobile Club, of Wilkes-Barre, Pa., during the ensuing year: President, George F. Lee; vice-president, Samuel P. Nicholson; secretary-treasurer, P. S. Ridsdale; board of governors, T. A. Wright and George W. Lewis. Under the rules of the club the first-mentioned officers with the last two named act as the governing board.

H. G. Vanderbilt Fined—Harold G. Vanderbilt, a member of the well-known New York family of that name, who is a student at Harvard college, has fallen under the ban of the Massachusetts highway commission and his license to operate his motor car is now suspended. Mr. Vanderbilt is attending the law school at Harvard, and a few nights ago he was in a hurry to catch a train for Portland, so he drove to the north station in his car. He got the train, but when he returned to Boston he found a summons to appear in court and faced charges of reckless driving and not having his lamps lit. He was found guilty on both charges and fined $20 on each one, but appealed. The highway commission then suspended his license and if he is convicted in the superior court the license will be revoked entirely.

MOTORING TOPICS DISCUSSED BY F. R. SIMMS

CHICAGO, Feb. 18—Frederick R. Simms, of Simms-Bosch magneto fame, reached this city today on his tour of the American factories which he is making to introduce his Simms British magnetos which are in practically every respect the same as the Bosch magneto marketed in America since the dissolution of the Simms-Bosch alliance and previous to which time the magneto was known as the Simms-Bosch.

Mr. Simms has been one of the leading lights of the industry in Europe since the early days of Gottlieb Daimler and Marquis de Dion. In addition to having made magnetos his leading field of investigation Mr. Simms has been interested in building motor cars for several years and has been a consistent enthusiast from the earliest days. In speaking of the inception of the magneto in Europe he said:

"I had been spending some days at the Daimler factory in Germany making investigations and on telling them my ideas on the magneto for ignition work was recommended to visit a German machinist who was interested along the same line. In conversation with this machinist, who proved to be Mr. Bosch, the topic of various types of ignition instruments came up and incidentally the rotating sleeve was mentioned. I was immediately seized with the idea of using it in that it gave an opportunity of a light moving part and stationary wiring. I carried the idea to England, where I perfected it and returned to Germany to have the ideas carried out in the Bosch factory. Such was the origin of the Simms-Bosch magneto. At that time Mr. Bosch had a magneto that stood over 16 inches high, which, of course, was impossible for use on motor cars.

Dream of the Future

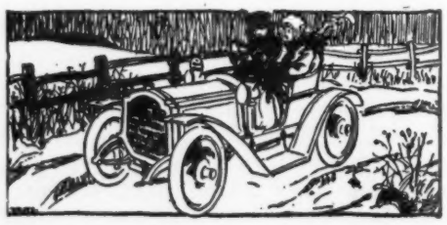
"I have a dream, and as yet it is only a dream, that the future source of electric current for a gasoline motor car will be some form of generator. The magneto of today is a highly perfected apparatus, being capable of running 15,000 miles or more without the slightest trouble and being so highly perfected it is going to require considerable effort to dislodge it from its premier position. However, when any particular thing is highly perfected look out for a change. It took steam a great many years to reach a stage of perfection, but as soon as the reciprocating engine reached its highest stages the steam turbine came along. Not only has the steam turbine come, but the gasoline engine has been rushed to perfection. In the gasoline engine field the present type has been evolved at an amazingly rapid rate and just at that moment when designers were wondering where to take the next improving step along has come the Knight valveless motor which is proving a very high efficiency one. Some distance ahead is the gasoline turbine. At present the turbine of the hydrocarbon type has many knotty obstacles to overcome, but the best engineers of Europe have been working upon it for 3 or 4 years, and it will come. The heat in conjunction with it is the present objection, but it took 100 years to develop steam and in much less time than that the gas turbine will be perfected. So it is with ignition, the magneto is in a highly perfected state and it will not be surprising to read some day in the morning paper about some machinist, never heard of before, who has brought out some new form of electric current supplier that will supplant all of the present types used on motor cars.

"The problem of the gasoline engine has been a most interesting chapter starting with the earliest efforts of Daimler and ending with the present Knight motor. With Daimler it was early experimentation with air and water-cooled types, Daimler having taken out patents in 1888 for air-cooling, at which time the idea of the fan blades in the flywheel was first conceived. His experiments showed equal efficiency in air and water-cooling to a certain cylinder size.

Idea on Cylinder Design

"In motor design I believe the proper cylinder design and that of greatest efficiency is placing the intake and exhaust valves in the cylinder head and using the hemispherical combustion chamber. Continued experiments have proven the value of this, but unfortunately it has not been adopted by French builders because it was not a French invention. The French are very slow to adopt designs that are not French, and as the French designer has been copied more than any other it is natural to expect the slow progress that this style of cylinder has had. Next to the valve-in-the-head type comes that with the intake valve above the exhaust, both carried in a compartment at the side in the L type of cylinder. This is an economical style and gives good opportunity of cooling the exhaust valves. Third in cylinder design is the L type with the intake and exhaust side by side in the bottom of the valve chamber; and last comes the T head with one valve at one side and the other valve opposite to it.

"The single camshaft is a cheaper construction than two camshafts and permits of a lighter construction, both of which are factors in the present trend of manufacture. For motors up to 10 horsepower the one-piece cylinder casting is the most satisfactory, but for higher powers than this the twin casting will prove the more popular. Thermosyphoning is gaining rapidly every year and is bound to come. It is the ideal cooling system and keeps the different parts of all the cylinders at a more uniform temperature than is possible with the pump circulation. It is true some of the present thermo-syphon motors are heavier than those with pump circulation, but this weight proposition can be easily adjusted.



"Many changes will take place in other parts of cars: The shaft-drive is everywhere, but for commercial purposes the chain is going to be supreme. The carrying of the gearbox up to the motor and making it a unit with the motor is highly commendable in that it eliminates one of the universal joints. Light rear axles must be obtained because of tire wear and in obtaining such pressed steel construction will eventually rule, not necessarily that particular contour used on the Fiats, but one with a round exterior. With pressed steel construction it will be possible to make a more pleasing design than that of many of the present-day axles. The pressed steel axle made in few parts will be light and allow of assembly twice as quick as now possible. At present it costs one French maker 28 francs to assemble a rear axle complete. Not only will the rear axle be pressed steel, but the gearbox parts will be made out of pressed steel together with the crankcase.

Number of Speeds

"The question of the number of speeds has been practically settled already, with four speed changes on big cars and three on all others, with one reverse. Many small cars use four speeds. The sliding gear transmission has so often been spoken of as the most unmechanical affair in the whole car, but genius has brought it to a very high stage of perfection. It is natural to expect that the square shaft for carrying the sliding gears will be entirely superseded by the castellated shaft.

"The six-cylinder car has come to stay. The first six-cylinder engine was made at Cannstadt, Germany, for the Russian government in 1899 and was a 300-horsepower marine type. Edge was the first man to conceive the idea of six cylinders for motor cars, and because it was an English idea the French maker has hesitated to build it, but the last Paris salon showed that every French builder of note of large cars had his six-cylinder model. The biggest trade will continue to be with the four-cylinder car, but from 30 horsepower and up the six will prove the dominating factor. The six-cylinder gives the ideal power creater and one that is easy to control and is easy on all of the car parts. With sixes and fours that maker will survive who will develop a car along simple lines with accepted constructions."

Brief Business Announcements

Evansville, Ind.—F. W. McNeely & Co. have enlarged their garage and salesroom.

St. Louis, Mo.—The Oldsmobile company is now located in its new branch on Twelfth street.

Denton, Tex.—Plans are under way for the establishment of a motor bus line between this town and Sanger.

Houston, Tex.—The Texas Transfer Taxicab and Supply Co. has been incorporated, the capitalization being $20,000.

Philadelphia, Pa.—The Regent garage is making preparations to remove from 4618 Regent street to 4525 Springfield avenue.

San Francisco, Cal.—J. W. Leavitt & Co. are now permanently settled in the new garage at Hyde street and Golden Gate avenue.

New York—The W. C. Poertner Auto Supply Co. has leased the store on the ground floor of the motor mart at Broadway and Sixty-second street.

Utica, N. Y.—The Ford Sales Co., local agent for the Ford car, has removed to its new headquarters in the Blasier building, 65-67 Columbia street.

Creston, Ia.—H. W. Edaburn has purchased a two-story brick building 42 by 100 feet and has moved his garage from 110 North Elm street to 129 Pine street.

Upland, Cal.—Preparations are being made for the operation of a motor bus line from the railroad terminal to Baynham's Camp, in San Antonio canon during the coming season.

Hastings, Ind.—The Stitt-Dillon Motor Car Co., recently incorporated, is acting as distributer for the Chalmers-Detroit in south, central and western Nebraska and a portion of northern Kansas.

Denver, Colo.—A new firm has been organized here by F. S. Vreeland, and will act as agents for the Matheson and Rauch & Lang. The headquarters of the company will be at 1643 Court place.

St. Louis, Mo.—C. H. Gray has been appointed manager of the local branch of the Goodyear Tire and Rubber Co., to succeed Fred Campbell. Mr. Gray was formerly in charge of the Texas territory for the same concern.

Pittsburg, Pa. — The Kunkel-Kelley Motor Car Co., which has the agency in western Pennsylvania for the Overland, is now located in its new garage on Baum street. E. C. Kunkel and H. J. Kelley are the members of the concern.

New Orleans, La.—An agent of the Toledo Electric Motor Works, of Toledo, O., has been in the city recently with a view to secure sufficient subscriptions of stock to warrant the erection of a factory for the manufacture of shaft-driven electric cars. It is likely the factory will be built here.

Nevada, Va.—The Boone Automobile Co. is erecting a new garage on Lynn street.

Wooster, O.—J. M. Ginter is erecting a new garage of fireproof construction. It will be 60 by 60 feet.

Watsonville, Cal.—Vaughan & Lee have been appointed agents for the Overland car in Santa Cruz and Monterey counties. Dev

Brooklyn, N. Y.—A. W. Blanchard, Inc., of 342 Flatbush avenue, is to act as agent for the Toledo as well as for the Waverley electric.

Philadelphia, Pa.—The Oxford Automobile Co., agent for the Gaeth and Brush, has moved to new quarters at 238 North Broad street.

San Francisco, Cal.—The Pacific Taximeter Cab Co. is now open for operation at 316 Van Ness avenue, under the management of F. C. Heal.

Columbus, O.—The Charles B. Shanks Co., of Cleveland, has been incorporated with a capital stock of $5,000, and will operate a motor car agency.

Pittsburg, Pa.—The Pittsburg Auto Equipment Co. will shortly apply for a charter and will manufacture and deal in motor cars, tires, supplies and accessories.

Athens, Ga.—W. H. Bishop has just moved into a new garage, which gives him 5,000 square feet of space. He has the Maxwell for Athens and twenty-five counties and also handles the Stoddard-Dayton and Ford, in addition to Indian motor cycles.

Pleasanton, Tex.—A service of three cars has been started between this town and San Antonio.

Gloversville, N. Y.—A new garage is to be erected on Washington street for the Gloversville Garage Co.

San Francisco, Cal.—Roy C. Scott has leased quarters on Golden Gate avenue, and will act as agent for the Jackson.

Philadelphia, Pa.—William and Charles Miller, of 441 North Broad street, have been appointed agents in this city for the Palmer & Singer.

Pittsburg, Pa.—The Buick Auto Agency has purchased the property at Baum and Euclid streets, and will start the erection of a four-story garage.

Denver, Colo.—The Central Motor Co., recently organized, has been appointed local agent for the Midland. W. C. Fawcett is to be the manager of the company.

Utica, N. Y.—The Oneida Square Motor Car Co. has opened an office and salesroom at 1 Oneida square. It has been appointed agent for the Maxwell and Stoddard-Dayton.

Pittsburg, Pa.—Application will shortly be made for a charter for a company, to be known as the Hamilton Automobile Co., which will engage in the sale and repairing of motor cars.

Trenton, N. J.—The United Globe and Rubber Mfg. Co. is about to go into the business of making motor car tires, and a part of the factory on Prospect street has been set aside for this purpose.

New York—Harry S. Houpt has leased quarters in the Rhinelander building at Broadway, and Sixty-eighth street, where he will make his headquarters as agent for the Herreshoff car, and later on for the new Houpt car.

Allentown, Pa.—William J. Wagner, who has been connected with the Singer Sewing Machine Co. for nearly 30 years, has resigned his position with that concern and in the future will be connected with the Dietrick Motor Car Co.

Houston, Tex.—A. C. Burton & Co. have been appointed agents for the Chalmers-Detroit. They have leased quarters at 312 Fannin street. A. C. Burton, formerly with the Empire Motor Co., and J. N. Johnson are the members of the firm.

Indiana, Pa.—W. E. Randall, formerly head instructor in the Automobile School of America of New York city, has bought Works' garage and repair shop. Charles R. Work, the former proprietor, intends devoting his time to the sale of motor cars.

Rochester, N. Y.—Auto and Motor Trades' Association, capital stock $1,000; incorporators, T. C. Henry, W. J. Graham, F. W. Peck, H. B. Carlton, all of Rochester.

New York—Overbaugh-Martin Motor Car Co., capital stock $50,000, to manufacture motor cars; incorporators, D. C. Overbaugh, A. L. Martin and R. H. Overbaugh.

Boston, Mass.—Boston Sight-Seeing Auto Co., capital stock $5,000, to operate a sightseeing car; incorporators, M. C. Schafer, A. S. Landan and A. Caplon.

Trenton, N. J.—Mitchell Sales Co., capital stock $50,000, to manufacture motor cars; incorporators, F. L. C. Martin, C. B. Ackers and J. W. Mosher.

New York—Help-A-Motor Co., capital stock $1,000, to manufacture motor car attachments and devices; incorporators, M. S. Brown, G. Kelly and J. N. B. Bond.

Greeley, Conn.—Greeley Automobile Co., capital stock $10,000; incorporators, L. C. Vanderlip, W. T. Lynn, W. D. Fancher and F. E. Reinks.

Buffalo, N. Y.—Buffalo General Mfg. Co., capital stock $6,000, to manufacture motor cars; incorporators, J. R. Kean, D. B. Doan.

Chicago—W. O. Dayton Automobile Co., capital stock $10,000, to engage in the manufacture of motor cars and accessories; incorporators, W. O. Dayton, T. A. Ryan and R. E. K. Cole.

ECONOMY OF WEIGHT REDUCTION IN CARS

By F. D. Howe
Member Society Automobile Engineers

HOW much can we afford to spend to save weight in a motor car? I don't know. When one starts to investigate, instead of reaching a definite conclusion, he raises a hydra-headed brood of questions:

What motor car?

What weight?

Whose money are we spending?

What does gasoline cost where it is to be used?

What roads is it to be driven over?

At what speed will it be run?

What grades will it have to climb?

What tires will be used, and what will they cost, and what is their load-life curve?

Now, some of these questions have no definite and well-defined answer. Others do. For instance, if the manufacturer is to stay in business, we know that, in the long run, the money that he spends must come out of the pocket of the man who buys the car, and so the primary question is: How much per pound can the buyer afford to pay for cutting weight out of his car? And second, can he be brought to realize the fact and give up the money?

Weight is an expense to the user of a car in many ways:

A He must pay for gasoline to move it around; B he must pay for tires to carry it; C it reduces hill-climbing ability; D it reduces speed on soft roads materially, and on a smooth, hard road to a much less extent. It wears out clutches in starting and brakes in stopping. It increases the time required to get up to speed, and in general makes the car less readily handled in traffic.

Each of these items will vary in importance with different conditions, but we may make certain assumptions that will enable us to reach an approximation to their value. Let us assume for a pleasure vehicle a life of 50,000 miles on which to base gasoline and tire expense. The cost of fuel to haul a pound of weight 50,000 miles will vary with road conditions, speed, carbureter adjustments, etc., as well as the efficiency of the driving mechanism and tires, so that we shall have to make another assumption based as far as possible on average performance.

In the Chicago economy contest of 1907 the average gasoline consumption was about 32.5 ton-miles per gallon, varying from 47 to 19. A similar average, with less difference between the extremes, obtained in an Australian contest, while the Cleveland sealed-bonnet contest over very poor and muddy roads gave an average of 16.8. If we assume a fuel efficiency of 30 ton-miles per gallon and a price of 15 cents per gallon, it will cost 12.5 cents for gasoline to move 1 pound around during the life of the car under fair touring conditions.

I am not aware of any extensive tests on which we may rely for data concerning the life of pneumatic tires. We need load-life curves for tires under various conditions of speed and road surface. The best we can do in the present instance is to take the manufacturers' rating for pneumatic tires and add the passenger loads. These total loads divided into the cost of tires will give the cost of tires per pound of weight.

If the car uses up eight sets of tires during its life of 50,000 miles the purchaser has no great cause for complaint, and each pound of weight carried by the tires will have cost him, in round numbers, 40 cents. These two major accounts of fuel and tires are responsible for an expense of 52.5 cents for each pound of unnecessary weight, and the purchaser can afford to pay up to that amount for weight reduction.

The wear on clutches and brakes would depend very much on their design, but with a given design would seem likely to be proportional to the weight to be started and stopped. Whatever saving there may be in wear and adjustment we may throw in with the satisfaction due to snappy acceleration and improved hill-climbing ability, and call it interest on his 52.5 cents for a period equal to half the life of the car.

Being pressed for time, I have taken the data for commercial vehicles from the article by Cecil H. Taylor in the September number of Motor. I have taken his average values for mileage and gasoline and tire costs per mile to get the total weights. I have added to his rated loads an assumed weight of car and driver, and have assumed a life for 5 years for the car.

These results are interesting and indicate clearly that a low selling price made possible by using a heavy construction of cheap, low-grade materials and careless design is a dear bargain for the man who foots the bills for running expenses. Ample strength and reliability are first essential in a commercial car, but if anyone can afford to pay the cost of securing these essentials by the use of the best materials, workmanship and design, it is the man who uses a motor car to make money with. Light weight is also a great advantage in commercial vehicles, which must be started and stopped frequently and handled in congested traffic.

So much from the point of view of the purchaser and user. The manufacturer's problem is to make the machine that will be the most profitable to himself. If he were to make a commercial car, cutting the weight down by careful design and high-grade material to the point of most economical service, he might have difficulty in making sales, for there are many who are called good business men who cannot see very far beyond a big first cost. Pleasure vehicles, however, built on this plan sell well, for the same business man who turns down a money-making investment in a business car will spend money freely on a car for transporting his own person.

For every purpose, there is a theoretical car of the lowest possible first cost compatible with the necessary strength and reliability. In this car, the grade of materials is so chosen and the design is so worked out that it will cost money, either to add weight, on account of increased

GASOLINE, TIRE AND FUEL COSTS IN MOTOR CAR SERVICE

GASOLINE

Rated load	Vehicle and driver	Total	Mileage 5 years	Mile per gal.	Gal. per lb. total wt.	Cost at 15c per gal.
500	1,500	2,000	100,000	25	2	$0.300
1,500	2,500	4,000	100,000	16	1.56	.235
3,000	2,500	6,500	85,000	11	1.19	.178
6,000	6,000	12,000	66,500	7	.79	.118
10,000	9,000	19,000	60,000	4.5	.7	.105

Rated load of vehicle, pounds	Tire cost per mile	Total mileage	Total tire cost	Tire cost per lb., gross wt.
500	1½c	100,000	$1,500	$0.750
1,500	2½c	100,000	2,500	.625
3,000	3½c	85,000	2,975	.460
6,000	4¾c	66,500	3,150	.263
10,000	6c	60,000	3,600	.189

GASOLINE AND TIRE TOTALS

	500 lbs.	1,500 lbs.	3,000 lbs.	6,000 lbs.	10,000 lbs.
Gas	$0.30	$0.235	$0.178	$0.118	$0.105
Tire	.75	.625	.46	.263	.189
	$1.05	$0.860	$0.638	$0.381	$0.294

Tire inches	Car weight	Passengers	Total	Tire cost	Tire cost per pound weight carried
2½ by 30	900	300	1,200	$ 63.60	$0.0530
3 by 30	1,400	300	1,700	75.20	.0445
3½ by 30	1,800	450	2,250	112.60	.0500
4 by 32	2,600	600	3,200	155.20	.0485
4½ by 34	3,200	900	4,100	209.00	.0510
					$0.2470
Average					$0.0496

cost of material, or to reduce weight, on account of either the increased labor cost in cutting out the metal, or increased material cost due to the higher grade and more expensive metals used.

This cheapest possible car will not be such a bad proposition as the term implies, for we have assumed that it has the necessary strength and reliability. It will probably be a most profitable one for the manufacturer who can build them in very large quantities. In fact, mass production with well-worked out design and the best special tools and fixtures are essential. If 10,000 parts are to be made without change, the saving of one cent on each balances an initial outlay of $100 in the designing or tool departments. An hour's time saved in making a pattern or core box may cost hundreds of dollars in extra metal, while a few minutes saved by the draftsman making his drawings the easiest way, rather than the correct way, may be equally expensive.

But strong, reliable and cheap as this car may be, it is by no means the best bargain for the purchaser. Just what is the curve of cost of weight reduction is unknown, but I fancy it is something like a parabola; certainly, when working near the origin of the cure, considerable results are obtained by a slight outlay, for even as weight begets weight, so weight saved in one part saves material and cost in another part.

In solving this problem for individual cases, we need a set of curves of weight and fuel consumption for vehicles of similar design. The assumption made of a uniform consumption of 30 ton-miles per gallon is manifestly unsound.

The heavy cars do better, light ones not so well. But along with the differences of weight go variations in design which vitiate any attempt to draw inferences as to the law governing the relation of weight to fuel consumption. Take the case of the Chicago economy contest in which a number of cars ran for 2 days under similar conditions. The weight and fuel consumption plotted out looks like a target made by a very poor shotgun, but the average would indicate that the fuel consumption is about inversely as the weight. That is, the heavy car should go as far on a gallon as a light one. We know that this is not necessarily so and we also know that a given car will go further lightly loaded than with a heavy load.

We also need a set of load-life curves for tires, both pneumatic and solid, a sort of mortality table like that which guides our friend, the insurance actuary. Like that table, it must be based on a great number of individual cases. Now each member of this society has one or more sets of tires under observation, the data from which he could forward to the secretary, who would plot the curves when sufficient material to make them reliable had been obtained.

Franklin Motor Tests for Cornell Students

Students in Cornell university, the University of Michigan and Syracuse university are given an annual opportunity to make tests of the internal combustion engine, one of which is installed in the laboratories of each of the institutions named by the H. H. Franklin Mfg. Co.

The tests are planned and the materials provided under the direction of the engineers of the Franklin company. It frequently is arranged so that students who do this thesis work are employed at the factory during the summer vacation and upon their graduation enter the company's engineering department, where they have been found to make efficient laboratory engineers. The work done on the subject of fuel mixture is indicative of what is done in these annual studies. All tests are 30 minutes' duration. Air to the carbureter is accurately metered, and the gasoline consumption carefully measured. The temperature of the air entering the carbureter is maintained as nearly constant as possible, and readings made every 2 minutes. The brake is then read, and the temperature of the air entering and leaving the hood is taken.

Samples of exhaust gases are taken at the beginning, after 10 minutes and at the end of each test. In each case the ratio of air to gasoline is checked by calculation from the analysis of the exhaust gases, the average analysis being used for this purpose. The tests are made in two series, one under constant speed and variable horsepower and the other with maximum horsepower and variable speed.

Five 30-minute runs were made. In run No. 1 the gasoline adjustment in the carbureter is shut off as much as possible and have the engine run without missing or popping back or causing any trouble. In run No. 5 the needle valve is opened as far as possible and still maintains 12 horsepower at 1,000 revolutions per minute. The three intermediate runs are made somewhere between the two extreme runs, and the results are used for the plotting of curves.

The gasoline consumed in the first run is about 3,000 cubic centimeters, and it is shown in test No. 5 that it is possible to get the same horsepower with the same length of run and the same speed and yet burn nearly twice as much gasoline. In applying this to road work it is found that it is possible to go 20 miles on a gallon of gasoline or to go 10 miles on the same quantity and under the same conditions.

This is a laboratory proof of an everyday incident, one man using twice as much gasoline as another to accomplish the same result. The excess of gasoline going through the motor might cause a good deal of heating, but if its use is possible in a laboratory with no fan other than that on the motor itself the same results can be obtained on the road without an extremely harmful outcome.

As to where this gasoline goes that passes through the motor, it is shown by the exhaust analysis that the combustion is incomplete. In the first test the loss due to incomplete combustion is approximately 1 per cent, and in the last test the similar loss of 17 per cent and the last test of 9 per cent. The ratio of air to gasoline, by weight, under the first test approaches closely the correct proportion according to the analysis of gasoline. In other words there is no excess in any of these tests. Generally speaking, it has been found advisable to run a certain percentage more of air than is required theoretically to make complete combustion, but in none of these tests has any excess of air been found. The theoretical amount of air necessary to make complete combustion with the gasoline used is 14.96 parts of air to one part of gasoline.

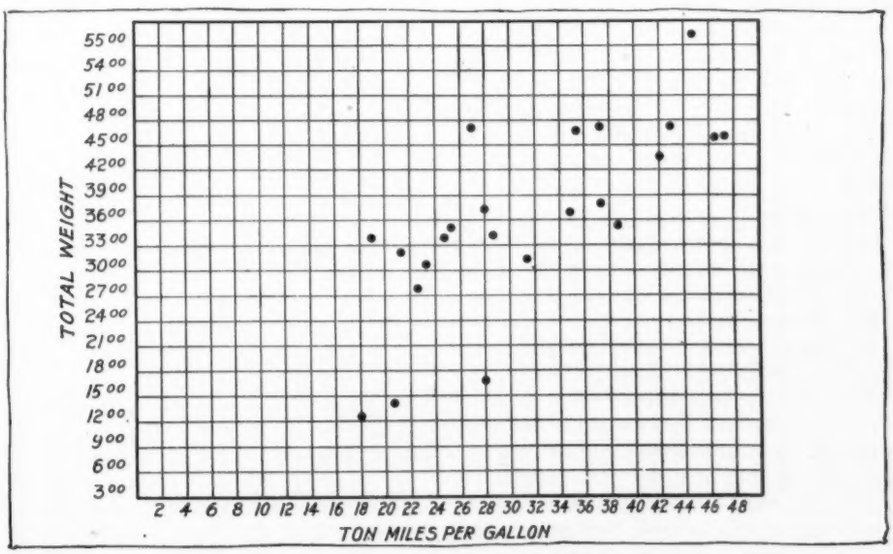


CHART SHOWING RELATIONS OF CAR WEIGHT TO FUEL

AMONG the MAKERS and DEALERS

PLANT OF BAKER MOTOR VEHICLE CO.

Huffman Adds Two—W. L. Huffman, formerly president of the W. L. Huffman Automobile Co., of Omaha, has taken the agency for the Regal and Hupmobile cars.

Racquet Club Garage Opened—The Racquet Club garage, with a capacity for seventy-five cars, has been opened at 1602-04-06 Chancellor street, Philadelphia, with G. D. Smith as manager.

Joins Stewart & Clark—C. E. Brelsford, for several years past Detroit manager for the Witherbee Igniter Co., has resigned from the Witherbee Co. and will manage the Detroit branch of the Stewart & Clark Mfg. Co.

Discher Will Resign—G. F. Discher, manager of the Milwaukee branch of the McDuffee Automobile Co. for the past 3½ years, has tendered his resignation. The business of the Garage Equipment Co., which he organized, has grown to such an extent that Mr. Discher finds it necessary to take the management of the business himself. He will, however, remain with the McDuffee company until a new manager is secured.

Whitney Resumes Business—C. S. Whitney, manager of the Park square garage in Boston that was destroyed by fire a few weeks ago, has leased the entire building at 41 Columbus avenue that remained untouched by the blaze, and he has opened up his repair shop there. At present his bookkeeping force from the burned garage is installed in his quarters at the motor mart, where he has a salesroom for Stoddard-Dayton cars.

Billings & Spencer Election—At the annual meeting of the Billings & Spencer Co. the following board of directors was reëlected: C. E. Billings, F. C. Billings, C. M. Spencer, L. H. Holt, Silas Chapman, Jr., E. H. Stocker and L. D. Parker. At a subsequent meeting of the board of directors the following officers were reelected: President and general manager, C. E. Billings; vice-president and superintendent, F. C. Billings; treasurer, L. H. Holt.

Gas Tank In Courts—Judge James P. Platt, of the United States circuit court at Hartford, Conn., has denied the request of the Prest-O-Lite Co. to have B. A. Carrier, of East Hampton, Conn., restrained from refilling tanks with gas. When the suit was originally brought, George L. Wilkinson, of Manchester, was made a defendant, but the action against him was dropped. The proceeding against Carrier, however, was carried on. The action of Judge Platt in refusing to restain Carrier from refilling tanks does not imply that the case is out of court, as it still remains on the docket. The plaintiff will have an opportunity to prove its final claims. The contention of the Prest-O-Lite Co. is that the gas used by Carrier is likely to be explosive.

Fiat to Bergdoll—The sensation of Philadelphia's row last week was the announcement that the Bergdoll Motor Car Co. had secured the local agency for the Fiat car and would handle it at the southwest corner of Broad and Race streets.

Klug Goes to Detroit—C. Klug, who has been connected with the main office of the Witherbee Igniter Co., of New York, for some years past, has been appointed manager of the Detroit branch, vice C. E. Brelsford, resigned. Mr. Klug will take up headquarters at 220 Jefferson avenue at once.

New Moline Agencies—Following are new agencies appointed by the Moline company: P. A. Johnson, Cambridge, Ill.; O. W. Alexander, Santa Fe, N. Mex.; George S. Miller, Monee, Ill.; J. H. Wiese Co., Eldridge, Ia.; O. S. Viner, Joliet, Ill.; Bloomfield Auto Co., Bloomfield, Neb.; J. H. Strohbeen, Walcott, Ia.; Isham Hardware Co., Coffeyville, Kan.

Merely a Business Move—Claim is made by the Oscar Lear Automobile Co., of Springfield, O., that the application for a receiver made last week was a business move. Harry C. Downer, a stockholder, filed the application, it being asserted lack of capital was the reason for the act, the company being solvent. The assets were given at $308,000 and the total indebtedness at $144,140. In explanation of this Mr. Lear writes Motor Age: "Owing to some pressing claims we found it necessary to ask the protection of the court, feeling confident that this would be merely a temporary measure and that in this way additional capital needed might be secured on advantageous terms, which would enable the company to increase its business on a scale justified by the apparent demand for its commercial trucks. The receiver appointed is a man of the highest character and it is predicted by all those who have had anything to do with the operation of this company that all interests will be taken care of and that the company in a reasonably short time will be in a better position than it ever has been."

Chryaler Changes—P. C. Chryaler, formerly with the Rainier Motor Car Co., has joined the selling forces of the American Locomotive Co., at 1886 Broadway, having been appointed manager of city sales.

Dr. Hills Resigns—Dr. H. H. Hills, assistant sales manager of the Buick company, has resigned his position in order to ally himself with the Packard Motor Car Co., of Detroit. Dr. Hills' resignation will take effect March 1.

Change of Name—The Huffman Automobile Co., of Omaha, Neb., has changed its name to that of the Omaha Automobile Co. The firm is now comprised of the following officers: A. S. Avery, president; A. La Verne, vice-president, and W. R. Homan, secretary.

Gibson Adds to Line—The Gibson Automobile Co., Indianapolis, has taken the central Indiana agency for the Marion and in addition will handle the Premier, Ford and Reo during the season. The northeastern Indiana agency for the Marion has just been taken by the Fort Wayne Automobile Co., of Fort Wayne.

Monson With Gray & Davis—Charles S. Monson has been made western sales manager for Gray & Davis. Mr. Monson was connected with the Gormully & Jeffery Mfg. Co. from 1893 to 1900 in the capacity of salesman and superintendent of agencies. He was with the Hartford Rubber Works Co. about 4 years, and later manager of the G & J Tire Co.'s Detroit branch.

Buys More Motors—Six McKeen motor cars left last week under their own power for Sacramento, for use on the branch lines of the Southern Pacific railroad. The Southern Pacific already has seventeen of the McKeen motor cars in service in California, and with the additional six, will have a total of twenty-three cars. The San Diego, Los Angeles and Beach railroad also has two McKeen motors in service in California.

Sternberg at Wichita—J. L. Sternberg has severed his connection with the Everett-Metzger-Flanders Co., and has gone into the retail business at 119 East Second street, Wichita, Kan., with a branch store at Enid, Okla. Mr. Sternberg was for several years with the Northern Motor Car Co. of Detroit, and in his new enterprise will be associated with M. L. Arnold and C. S. McClellan, of Enid, Okla., who have already taken on the agency of the Interstate car, and expect

to close for other agencies in the near future. The concern will operate under the name of J. L. Sternberg & Co., at both Wichita and Enid.

Leavitt to Move—On and after March 20 the offices of C. W. Leavitt & Co. will be located in the Cortlandt building, 30 Church street, New York. Leavitt & Co. are importers of ores, metals and alloys.

Has Branch in Detroit—The Stewart & Clark Mfg. Co. has opened a branch office in Detroit under the management of C. E. Brelsford at 697 Woodward avenue, which will take care of all Detroit trade and also all the Michigan car factories.

Great Western Agency Moves—The Great Western Motor Car Co., agent for the Great Western cars made at Peru, Ind., have removed its office and salesroom from 1326 Michigan avenue, Chicago, to 1253 Michigan avenue, Chicago.

Opens Electric Garage—J. C. Bartlett has opened an electric vehicle garage at 1938 Market street, Philadelphia, where he will also exploit Woods electric vehicles locally. This is the first exclusively electric garage to be established in Philadelphia, and besides the usual battery charging and cleaning facilities there will be a fully-equipped body-building and paint shop.

Columbia's January Report—The report of Henry W. Nuckols and Halsey M. Barrett, receivers of the Electric Vehicle Co., for the month of January has been duly filed with the superior court. Cash sales are noted as being $25,713.72, while purchases amount to $31,095.85. According to the report filed, cash was collected on the receivers' account to the amount of $25,354.15, while from the Selden patent royalties was realized the sum of $101,206.68. Under the head of disbursements the A. L. A. M. is credited with having been paid $40,701.71 by the receivers. The cash balance foots up $173,936.45.

Rambler Plant Still Growing—Thomas B. Jeffery & Co. contemplate large additions to their factory. Contracts will shortly be let on four new buildings, one of which it is intended shall have a larger floor space than the Chicago Coliseum. This structure will be devoted to the inspection and exterior finishing department. The building will be approximately 125 yards square, measuring 386 feet each way. A laboratory is also planned. A new office building will be built, while additions will also be made to the now large machine shops in which all Rambler parts are shaped and finished. The office building will be two stories high, 250 by 200 feet in dimensions, and the offices will be located on the second floor. Immediately after the close of the Chicago show, the Rambler people started a night shift in the factory and the output of the Ramblers the coming year has been correspondingly increased. Eight years ago the Rambler occupied a portion of what was once the old Sterling bicycle factory in Kenosha. In each year large additions have been made to this factory, until now it occupies an area approximating 600,000 square feet.

Nadall Agents Named—The General Sales Co., of Detroit, has taken the sole representation of the Nadall demountable rim. The Curtin-Williams Co., of Columbus, O., has taken the Columbus agency.

Has New York Coil Co. Line—The Factory Sales Corporation, 233 Randolph street, Chicago, has just taken on the product of the New York Coil Co., comprising both high and low-tension coils in all the various forms applicable to motor car, marine and gasoline engines.

MacAlman Adds Stearns—President John H. MacAlman, of the Boston Dealers' Association, has just secured the agency for the Stearns cars in the Hub. Mr. MacAlman has the Columbia line also, which he retains. The Stearns was handled by Morgan B. Kent, who resigned a few weeks ago. Mr. MacAlman has removed his main salesrooms to Boylston street, where the Stearns cars were sold by Mr. Kent, but he will still retain his Stanhope street building as a garage and repair shop, as well as for an overflow when his two lines are represented by all models.

Overland Still Growing—The Overland Automobile Co., of Indianapolis, is again increasing its factory accommodation. A large frame structure has almost been completed adjacent to the original Marion Motor Car Co.'s plant, and negotiations are now in progress to rent another large carriage factory which is at present standing idle in Indianapolis. This will make the fourth distinct factory operated by Mr. Willys and his associates in Indianapolis. It will be recalled that these gentlemen purchased the Marion Motor Car Co. some few months ago, determined to devote it exclusively to the building of Overland cars. The demand, however, for the Marion from a number of old owners was so insistent that it was decided to go ahead and build a quantity of these, and a large and commodious factory, previously owned by the Speed-Changing Pulley works, was secured for this purpose. It was originally intended to build 1,500 Overland cars for 1909, but with the increased accommodation contracts have already been placed for parts sufficient to build 3,000, with an option on from 500 to 1,000 more. The output for Overland cars alone is already twenty-five per day.

American Show Dates

Buffalo	March 2- 6
Boston	March 6-13
Kansas City	March 8-13
Milwaukee	March 11-14
Portland, Ore.	March 8-18
Minneapolis	March 13-20
Rochester	March 15-20
Toledo	March 22-27
Syracuse	March 24-27
Pittsburg	March 27-April 3

W. S. Gilbreath, late of the Pope-Waverley Co., is an addition to the personnel of the company. Mr. Gilbreath will be associated with P. D. Stubbs in the sales department.

Craig with Haynes—Charles C. Craig has been engaged by the Haynes Automobile Co. as special traveling representative and will, for the present, cover the western territory in the interests of the Haynes Co.

Chicago Concern Moves—The India Rubber Tire Co., formerly located at 477 Wabash avenue, Chicago, is occupying quarters at 1461-1463 Michigan avenue. In addition to the regular business of tire repairing, etc., it is handling a line of tires and sundries.

Big Baker Plant—Claim is made that the present plant of the Baker Motor Vehicle Co. at Cleveland, O., near Edgewater park, is the largest in the United States devoted exclusively to the manufacture of electric carriages. It is the third plant the company has occupied and every effort has been made to attain perfection in the way of architectural design, hygienic arrangements and equipment.

Buicks Use Remy Magnetos—In the February 4 issue of Motor Age in the table of specification of cars, on pages 20 and 21, an error was made in mentioning Bosch magnetos as equipment on Buick cars, whereas Remy magnetos are regularly fitted. The Buick line for this season uses Remy as regular factory equipment; in fact, the order for these magnetos was one of the largest magneto orders ever given.

Velie Appoints Agents—The Velie Motor Vehicle Co. has closed New York city with the Overbaugh-Martin Motor Car Co., 1661 Broadway; Boston and New England states with the Kilbourne-Corlew Motor Co., of 26 Bowker street* Pittsburg with the Keystone Automobile Co.; California with the Standard Motor Car Co. of Los Angeles and San Francisco; Toledo with the Atwood Automobile Co.; Grand Rapids, Mich., with C. J. Oswald Co., and Lexington, Ky., with the Blue Grass Automobile Co. The factory organization at Moline is now complete, and the factory at the present time is getting out twenty cars a week.

Intercity Bus Line—The Acme Motor Car Co., of Reading, Pa., is about to inaugurate an innovation in the transportation line which from its very novelty may prove sufficiently popular to make it a paying proposition. It proposes to establish an intercity bus line between Philadelphia and New York, with the termini at the Bellevue-Stratford and Waldorf-Astoria respectively. As at present outlined the scheme is to run over 1 day and return the next, the round trip fare to be $20. If the new venture proves a success a similar 1-day line will be established between Philadelphia and Atlantic City during the coming summer.

ENGLISH EXPERT DISCUSSES CARBURATION

CONSIDER the question of carburation in the broad sense of the term, not only as applied to the use of gasoline, but in a certain degree as regards other liquid fuels. The whole question is discussed from the point of view of an engineer rather than that of a chemist. Motor car engineers depend upon carburated air for the fundamental existence of their products and work. In that respect they differ from any other branch of engineering science, in that practically their whole base is dependent upon one type of fuel treated in one particular manner. Mechanical engineers in other branches of the science have many bases from which to work, such as wind power, water power and steam power, either directly applied or through the medium of electricity.

There is no doubt that the fact that gasoline has become the universal fuel for motor purposes is owing to its great adaptability, its cleanliness, ease of manipulation, and, comparatively speaking, wide limits of range as regards portions of air and vapor within which it is possible to ignite the mixture. The name petrol, however, is scarcely distinctive, and does not in any way define the properties of a liquid fuel. It might designate a spirit distilling completely at any temperature between 40 and 150 degrees Centigrade. Such spirits as those will completely evaporate at ordinary temperatures without leaving a residue when properly refined, but the only apparent difference between the two extremes is the time taken to effect complete evaporation.

Time Element a Factor

As far as a gasoline is concerned, the time element has some bearing upon the question of carburation, for, in a motor car, when the load upon the engine might vary enormously from moment to moment, the rapidity with which the carbureter responds to the demands made upon it is a great factor in determining the flexibility of the engine. Next to the consideration of the velocity of the air, as a factor in carburation, is the manner in which the air meets the gasoline, and that is dependent upon the arrangement and type of the carbureter.

Considering the three types of carbureter for gasoline, there is the wick carbureter in which a natural system of carburating the air introduced was employed. That is termed the surface carbureter. Carburation by bubbling resulted in selective evaporation taking place, but, when wicks are used, fractions of a higher boiling point flowed as readily as those of a lower boiling point, and, therefore, as far as the gasoline in the carbureter tank is concerned, selective evaporation does not take place.

It is obvious, therefore, that only gasoline of a low boiling point can be used successfully in that manner, as no mechanical action took place in the surface carbureter. Hand regulation operating a slide on the inlet pipe is necessarily required, in order to admit more or less air directly into the mixture, to compensate for variations in the rate of volatilization of the liquid gasoline.

EDITOR'S NOTE—Robert W. A. Brewer, A. M. I. C. E., M. I. Mech. E., M. I. A. E., delivered the following lecture on Carburation before the Royal Automobile Club January 27:

The next step in carburation is the means of disintegrating the particles of liquid to a greater or less degree, so as to assist volatilization. That system is in general use at the present time in the form of a jet, which had one or more fine holes through which the gasoline flows. The flow of gasoline from the jet in such a semi-mechanical carbureter is not perfectly under control, but is affected by the inertia of the gasoline in the jet and by the suction of the engine. The jet is placed in a contracted opening in the carbureter, preferably in a cone of a certain taper, the effect of the cone being to still further rarefy the ejected particles of liquid.

Choke Tube Is Useful

If a cone is not employed, a choke tube or other similar device is often very useful, as the required size of tube can be fitted to suit any abnormal condition in the atmosphere or density of the fuel. When that arrangement is adopted, the necessary air is drawn up around the jet, inducing the gasoline to follow it in the form of a spray, part of which immediately volatilizes, the heavier fractions being carried along the induction pipe into the engine cylinders in the form of a mist. There is also a variation of this system, which consists of an arrangement of the jet at right angles to the air stream. That makes a very simple form of carbureter and combines a throttle, which, when in action, deflects more or less air into the vicinity of the jet.

A choking of the quantity of gasoline passing had been attained by placing a resistance to the flow of gasoline in the small passage between the float chamber and the jet. That resistance is in the form of a spiral of a particular pitch or a notched bar. The friction of the gasoline in traversing that obstruction has a retarding effect upon the velocity of the gasoline, so that instead of a small increase in the velocity of the air producing a large flow at the jet, only sufficient gasoline can pass to fulfill the necessary requirements. It will be noticed what a complicated series of operations must be considered, as the suction at the jet and the consequent flow of gasoline which the air in passing produced is not directly proportional to the amount of air passing. Any spring made is proportional in its movement; that is to say, the range of elongations or compressions obtained are directly proportional to the load applied. Spring control is at the best, therefore, a compromise. Auxiliary air inlet valves do in a measure reduce the suction at the jet when the engine runs at higher speeds, but it is impossible to attain the correct proportions of air to gasoline at all speeds by means of a spring contrivance.

The Mechanical Carbureter

Thirdly, there is the mechanical carbureter, which depends chiefly upon the mechanical action of a pump or spray producer to effect carburation. A purely mechanical carbureter, in which the feed fuel can be accurately measured and delivered to the engine, has a much wider range of possibility than an ordinary jet or surface type, for one finds that many fuels of a negligible volatility can be effectually disintegrated by mechanical means, and thus produce a mixture of air and a fine spray of fuel suitable for use in an internal combustion engine. It was quite possible by mechanical or semi-mechanical means to produce a spray so fine as to be in the form of a mist, the desired effect being attained by forcing or sucking the air through a very thin film of gasoline.

The fuel in the form of mist exposes its maximum surface to contact with the air, and thus enables each particle of hydrocarbon to combine with its requisite quantity of oxygen in the process of combustion. Mechanical mixing being the first step toward chemical combination in this case, a failure will result in unburnt fuel passing through the engine cylinders into the exhaust, where it may be condensed to its original liquid form. The time occupied in this process of carburating is only a fraction of a second, and, assuming that the rate of revolution of an engine was 2,000 per minute, the time occupied by admission and compression of the mixture —being that in which carburation must take place—is 1-2,000 of a minute or 1-33 of a second. When fuel evaporates, a certain amount of heat must be supplied equal to the latent heat of evaporation of the fuel, and that is usually supplied by the incoming air. When starting from cold that is not possible, so that flooding of the mixing chamber has sometimes to be resorted to, as only the small proportion of lighter fractions will evaporate off at first. An excess of fuel, is, therefore, required momentarily in order to start the action of the carbureter. Very low temperatures are soon reached when quantities of fuel are rapidly evaporated which might be as low as —10 degrees Centigrade. To avoid that, either an excess of air must be admitted, or the carbureter itself heated either by water or exhaust jacketing, the former for preference. Although gasoline will completely evaporate at ordinary tem-

peratures when exposed to the air, the time taken to completely disappear depends upon the final boiling point of the liquid. The lighter fractions of the gasoline will come away quickly, and, therefore, when the fuel has a low final boiling point, no external assistance is required, such as the application of heat. The higher the final boiling point is raised, the greater is the difficulty of consuming the whole of the liquid; the heavier fractions must either be assisted in their volatilization by means of heat, or in their atomization by mechanical means. The volatilized portions of the gasoline might carry over the heavier in the form of suspended particles, when those heavier portions existed, and, assuming that they were not precipitated in the inlet pipe, they would burn in the engine cylinder. But when a large proportion of the fuel consists of fractions having a high boiling point, such as in the case of Borneo spirit, which completely distilled at temperatures from 170 to 200 degrees Centigrade, it is very advisable to assist carbuspirit, which completely distills at temperature will also cause the incoming vapor to condense in the induction pipe which deranges the proportions of the mixture actually passing to the engine.

Viscosity and Specific Gravity

The viscosity and specific gravity of the fuel affects its rate of flow through the jet tube, and those properties vary with the temperature of the fuel. As that temperature is increased, it becomes less viscous and more liquid will issue through the same sized orifice in the same unit of time.

EFFECT OF HEATING AIR—SOREL

14.8	deg.....21.86	0.683	0.721
21	deg.....19.13	0.683	0.721
30	deg.....23.98	0.683	0.722
40	deg.....48.03	0.698	0.7265
50	deg.....56.62	0.703	0.7255

The original specific gravity of the gasoline is 0.7125 and 100 liters of dry air at the above temperatures are passed through a tube through which the gasoline is allowed to trickle in the same direction—the operation taking about 1½ hour.

These figures show that as the temperature of the air rises a larger weight of liquid can be carried in suspension by the air in the form of vapor. When saturated vapors are dealt with, it is, therefore, necessary to heat the air, in order to enable it to suspend the vapor without condensation taking place.

Vapor is said to be saturated when the molecules given off from the surface are numerically the same as those which fall back into the liquid; the vapor thus given off has a certain elastic power or tension. That power in regard to air is capable of supporting a column of mercury 760 mm. high. When the tension of the vapor given off by a liquid under the action of heat balances the tension or pressure of the atmosphere, the liquid boils. Vapor pressure is, therefore, the pressure the vapor would sustain without condensation. In the case of a sponge, if it were partially petrified, it could only contain or absorb a small amount of liquid, which liquid is easily released by shaking. That is analogous to cold air. When the sponge is old, its capacity is greatly increased, and more liquid can be retained, also more squeezing is required to free the sponge from the liquid; in the same way the retentive power of the air is increased by heating.

Forming Explosive Mixture

Now, one can deduce the proportion of oxygen required to be mixed with the saturated vapor to form an explosive mixture by ordinary chemical methods. Those proportions must be such that the propagation of the flame will be sufficiently rapid to produce complete combustion, and, consequently, what is commonly termed an explosion. When one knows the chemical composition of the vapor, he can determine the proportion of oxygen that each constituent requires for its combustion. Fundamentally, taking air as consisting of 21 parts of O to 79 of N by volume one sees that 1 cubic foot of oxygen is furnished by 4.8 cubic feet of air, or 1 pound of oxygen by 4.35 pounds of air at 15 degrees Centigrade. So, calculating the quantity of air required to furnish the necessary oxygen for the complete combustion of 1 pound of petroleum vapor of, say, 86 per cent C, 14 per cent H, for Pennsylvania spirit, 1 pound of H requires 34.8 pounds of air.

So 0.14 pound H requires 0.14×34.8, or 4.87 pounds air to burn it alone.

1 pound C requires 11.6 pounds air.

So 0.86 pound C burned to CO_2 requires 0.86×11.6 or 9.98 pounds of air for the C.

Making a total of 9.98+4.87 or 14.85 pounds, say 15 pounds theoretically.

If the temperature of the air is 15 degrees Centigrade, and at atmospheric pressure 15×13.4 is equal to 200 cubic feet of air approximately, required theoretically per pound of gasoline, then it follows naturally that the greater the density of the gas the greater will be the amount of air required for the complete combustion.

Introduction of Air

In practice, however, as is the case where coal is burnt, about one and one-half times the theoretical amount of air must be introduced on account of the nitrogen present, and, in the internal combustion engine, the burnt gases which remain in the cylinder. Those inert gases materially reduce the velocity of propagation of the flame. One therefore requires about 23 pounds of air or 300 cubic feet per pound of vapor.

In order to obtain the best results from a gaseous mixture one must have the following conditions fulfilled:

1—The two gases mixed in their proper proportions.

2—The temperature and pressure of the gases within fixed limits.

In practice the most economical mixture is arrived at by a system of trial and error well known to the majority of users of motor cars, as the conditions are scarcely identical in any two engines. Differences of working temperature and compressions cause considerable modifications to be necessary in order to obtain the ideal results; and those results also are affected by the presence of exhaust gases in varying proportions, according to the efficiency of the silencer employed.

In order to illustrate carbureter loss when that is reduced to a minimum, I will introduce the following table worked upon the results of the Tourist trophy race of 1906. The figures are based on those given by Colonel Crompton in his paper on "Modern Motor Vehicles," and the results had been extended in order to show what the carbureter loss was in the case of the winning car, and the car which used the least gasoline, also the percentage in loss of thermal efficiency due to that cause. "Carbureter loss" in the table implies all losses which took place either owing to fuel passing through the engine in an unburnt or partially burnt state, as well as any loss through leakage or caused by "blow-backs" in the carbureter.

Tourist Trophy Race, 1906

	Winning car	Car using least gasoline
Average weight, pounds	2743.5	2627.75
Average speed, miles per hour	39.29	36.8
Average net horsepower	13.35	10.5
Total horsepower hours	53.8	46.6
Gasoline used, pounds	44.9	38.5
Gasoline used per net horsepower hour, pounds	0.83	0.825

For the winning car, calculating upon a thermal efficiency for the engine at 21 per cent and a mechanical transmission efficiency of 92 per cent, taking the calorific value of the gasoline at 18,500 thermal units per pound, one has the following:

$53.8\times33{,}000\times 60 =$ { 106 million foot-pounds given out by the engine in the form of useful work done.

$\frac{106\times100\times100}{21\times92} =$ { 550 million foot-pounds representing heat taken up by the engine.

$778\times44.9\times18{,}500 = 647$ million foot-pounds work in fuel used.

By difference one had 95 million foot-pounds = loss in carburation $= \frac{95}{647}$ = 15 per cent of the fuel.

Total efficiency of engine, carbureter, and transmission $= \frac{106}{647} = 16.4$ per cent, and 15 per cent loss in carburation = 2.46 per cent loss of efficiency.

Therefore, with perfect carburation and no loss of fuel, there would have been an efficiency of 18.86 per cent.

Considering the car using the least gasoline, the figures would become—

$46.6 \times 33{,}000 \times 60 =$ { 92.5 million foot-pounds representing useful work done.

$\frac{92.5 \times 100 \times 100}{21 \times 92} =$ { 478 million foot-pounds representing the heat taken up by the engine.

$778 \times 38.5 \times 18{,}500 = 555$ million foot pounds work in fuel used.

By difference one has 77 million foot-pounds work lost in the carbureter = 13.85 per cent.

Total efficiency of engine, carbureter and transmisison $= \frac{92.5}{555} = 16.65$ per cent,

and 13.85 per cent loss in carburation = 2.31 per cent loss of efficiency.

Therefore, with perfect carburation and no loss of fuel, there will have been an efficiency of 18.96 per cent.

Work of Carbureter

The carbureter is to the gasoline engine as the gas producer is to the gas engine, or the boiler to the steam engine, namely, an apparatus which supplies the working fluid to the engine itself in its most suitable form. There is this principal difference, however, that whereas the gas producer or steam boiler supply that fluid more or less in bulk, a carbureter supplies each charge as required by the engine—the action starts when the engine starts and stops in a like manner. The analogy to the steam boiler goes one step further in that there is the liquid space or chamber, and that which is occupied by the gas or vapor. These two spaces in the modern carbureter are distinct and separate, but in the older type of surface carbureter the vapor was drawn away from the surface of a body of liquid. Nearly every modern carbureter is worked on the float feed system, there being a regulating chamber into which the liquid is fed from the main fuel tank; a small float, in rising or falling with the level of the liquid, opens or closes a needlevalve, thus tending to maintain a constant level of fuel in the float chamber.

Whatever the direction of the air current happens to be in any carbureter, its influence upon the liquid fuel contained in the jet tube is to cause it to issue from the tube in a small stream. This is due to the fact that an air velocity is always an indication of a difference of pressure at any two points in the air stream. In the case of a motor car the air velocity is due to the suction pressure, or pressure below that of the atmosphere, being formed in the induction pipe, due to the displacement of the pistons. The functions of the jet tube are two-fold: To regulate the supply of fuel, and to proportion it correctly to the quantity of air passing into the induction pipe; to atomize the fuel as it issues from the orifice, so that a mist, or very fine spray, is formed in the mixing chamber.

Suction and Air Velocity

The relations between suction and air velocity can be well defined, as it is known that the velocity of air flowing into a vacuum can be calculated from the ordinary formula for falling bodies:

$$V = \sqrt{2 g h},$$

where V = the velocity in feet per second.
g = the acceleration due to gravity
= 32.2 feet per second per second.
=32.2 feet per second.
h = the head in liquid feet.

This formulæ enables a curve to be constructed from which the section pressure in any portion of a carbureter system can be calculated when its area is known, and also the volume swept out by the pistons in unit time.

When the rates of flow through an orifice of any dimension are known, it becomes a simple matter to reckon what suction is produced in the area surrounding the jet, as this suction bears a direct ratio to the quantity of liquid which passes the orifice. The gasoline consumption can be measured by means of a small tank, and readings taken over known distances, keeping the engine speed constant. Thus, a third method of arriving at the suction and flow is possible. The particular jet tube in the Claudel Hobson carbureter has an external sleeve, perforated at each end, which has a balancing effect upon the local intensity of suction by allowing air to pass through the annular space from a region of greater pressure. For instance, assume an engine to be running at 600 revolutions per minute. This may occur under two different sets of conditions—first, when the car is ascending a hill with throttle full open, the engine just manages to overcome the resistance, but its speed will not increase beyond 600 revolutions per minute. The throttle opening gives an area of 3.8 square centimeters, and the air velocity through this opening is 120 feet per second, giving a theoretical suction of 3.4 inches of water. The experimental suction taken with a manometer at the throttle opening is 3.6 inches of water, which is within the limits of experimental accuracy. This produces a flow of gasoline of 0.75 gallon per hour through the jet orifice, 1.05 mm. diameter in these tests.

Second Set of Conditions

Under the second set of conditions the engine may still be running at 600 revolutions per minute, but with the car on the level and the throttle half closed. In this case a somewhat smaller weight of air will enter the cylinders in unit time owing to wire-drawing at the throttle, which has now an area of only 2.5 square centimeters. The velocity in this second case is 180 feet per second if the cylinders are filled, thus allowing the same weight of air to enter; but the local suction at the throttle in this second case is produced by an air velocity of 180 instead of 120 feet per second, corresponding to 8.1 inches of water. Owing, however, to the sleeve surrounding the jet, this suction is not reached, as the suction at the outer end of the sleeve is theoretically 0.60 inch of water. Taking the mean of these two, we have 4.35 inches of water as the probable suction at the jet, producing a flow of 0.77 gallon per hour, which is practically the same as in the first case.

Results of Experiments

The results of a series of experiments carried out over long distances are given to show the application of the methods of reckoning by calculation. It is not expected that the jet orifice thus determined shall be exactly accurate in every case, and that no experimental work will be afterward required, as no really exact determinations can be made for different sets of conditions, and it depends upon the tightness of the pistons and prevention of air leakage. The base to work from is the proportion of liquid to air, and this varies with the compression of the engine and temperature of the air. The shape of the induction pipe also has some bearing upon the question, but the limits of accuracy should be within the limits of explosive range of the mixture, or, say, within 8 per cent, being 4 per cent on each side of the best mixture. The majority of carbureters are not fitted with a balancing tube, but with some form of valve which opens as the suction increases, whose action is balanced by a spring. Such a device can only give correct mixtures at two or three points, as the effect of a spring-controlled device is not coincident with the rates of flow of the liquid under varying conditions. The inertia of the liquid also affects its flow, particularly under large variations of speed, and with a small number of cylinders.

Fresh From Factories

The Connecticut Telephone and Electric Co., Meriden, Conn., is making a number of different styles of pocket meters for testing batteries, among which is a new meter made up on the dead beat principle, with an improved type of pointer construction, and an etched metal dial.

The Blaine-Thompson Co., Cincinnati, has gone into the motoring field with a new accessory in the shape of a dry battery, designed and constructed for the motor car trade.

The fad of fitting bouquet holders in limousine cars to add natural beauty to the interior decorations and freshness to the atmosphere has become extremely popular this winter, and a large variety of these novelties are being manufactured by Gus. Balzer, New York.